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L4 3811 SEA FILE=REGISTRY ABB=ON PLU=ON (LI(L)P(L)O(L)(TI OR V
OR CR OR MN OR FE OR CO OR NI OR CU OR ZR OR NB OR MO OR
RU OR AG OR TA OR W OR PT OR AU))/ELS
L7 521 SEA FILE=REGISTRY ABB=ON PLU=ON L4 AND 2-7/LI
L9 3102 SEA FILE=REGISTRY ABB=ON PLU=ON L4 AND 3.5-8/O
L10 2942 SEA FILE=REGISTRY ABB=ON PLU=ON L9 AND 0.01-1/M
L11 476 SEA FILE=REGISTRY ABB=ON PLU=ON L7 AND L9 AND L10
L21 473 SEA FILE=REGISTRY ABB=ON PLU=ON L11 AND TIS/CI
L22 210 SEA FILE=HCAPLUS ABB=ON PLU=ON L21
L24 117 SEA FILE=HCAPLUS ABB=ON PLU=ON L22 AND ELECTROCHEM?/SC, SX

L25 59 SEA FILE=HCAPLUS ABB=ON PLU=ON L24 AND (1840-2003)/PRY,AY
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=> sel 125 hit rn 1-

E52 THROUGH E232 ASSIGNED

=> d 125 1-59 ibib ed abs hitstr hitind

L25 ANSWER 1 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2007:41410 HCAPLUS Full-text
DOCUMENT NUMBER: 146:145947
TITLE: Novel electrode active material for a secondary
electrochemical cell
INVENTOR(S): Barker, Jeremy; Burns, Paul; Bryan, Aiden; Grover,
Richard
PATENT ASSIGNEE(S): UK
SOURCE: U.S. Pat. Appl. Publ., 17pp., Cont.-in-part of
U.S. Ser. No. 870,135.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 4
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20070009800	A1	20070111	US 2006-531824	20060914
US 6387568	B1	20020514	US 2000-559861	20000427
US 20030027049	A1	20030206	US 2001-14822	20011026
US 6777132	B2	20040817		
US 20040265695	A1	20041230	US 2004-870135	20040616
US 7214448	B2	20070508		
WO 2008033672	A2	20080320	WO 2007-US77173	20070830
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,				

IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK,
 TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN,
 TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG,
 ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: US 2000-559861 A2 20000427
 <--
 US 2001-14822 A3 20011026
 <--
 US 2004-870135 A2 20040616
 US 2006-531824 A 20060914

ED Entered STN: 12 Jan 2007

AB The invention provides a novel polyanion-based electrode active material for use in a secondary or rechargeable electrochem. cell having a first electrode, a second electrode and an electrolyte.

IT 918961-43-0P, Iron lithium fluoride phosphate
 (FeLi2F1.3(PO4)0.9) 918961-45-2P 918961-47-4P
 (electrode active material for secondary electrochem. cell)

RN 918961-43-0 HCAPLUS

CN Iron lithium fluoride phosphate (FeLi2F1.3(PO4)0.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1.3	14762-94-8
O4P	0.9	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

RN 918961-45-2 HCAPLUS

CN Iron lithium magnesium fluoride phosphate
 (Fe0.95Li2Mg0.05F2.2(PO4)0.6) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	2.2	14762-94-8
O4P	0.6	14265-44-2
Mg	0.05	7439-95-4
Li	2	7439-93-2
Fe	0.95	7439-89-6

RN 918961-47-4 HCAPLUS

CN Iron lithium manganese hydroxide phosphate
 (Fe0.2Li2Mn0.8(OH)1.6(PO4)0.8) (CA INDEX NAME)

Component	Ratio	Component Registry Number
HO	1.6	14280-30-9
O4P	0.8	14265-44-2
Mn	0.8	7439-96-5
Li	2	7439-93-2
Fe	0.2	7439-89-6

INCL 429231900; 429231950; 429221000; 429231500; 429224000; 429220000;
 429225000; 429223000; 429217000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)

Section cross-reference(s): 49
 IT 918961-43-0P, Iron lithium fluoride phosphate
 (FeLi2F1.3(PO4)0.9) 918961-44-1P, Sodium vanadium hydroxide
 phosphate (NaV(OH)1.3(PO4)0.9) 918961-45-2P 918961-46-3P,
 Sodium vanadium chloride phosphate (NaVC11.6(PO4)0.8)
 918961-47-4P 918961-48-5P, Iron lithium fluoride silicate
 (FeLi2F1.2(SiO4)0.9) 918961-49-6P, Lithium vanadium fluoride
 phosphate (LiVF1.3(PO4)0.9)
 (electrode active material for secondary electrochem. cell)

L25 ANSWER 2 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:545195 HCAPLUS Full-text

DOCUMENT NUMBER: 143:81020

TITLE: Lithium battery showing both high electric
 potential and lithium intercalation capacity.

INVENTOR(S): Jouanneau-Si Larbi, Severine; Le Cras, Frederic;
 Bourbon, Carole; Gauthier, Gilles

PATENT ASSIGNEE(S): Commissariat a l'Energie Atomique, Fr.

SOURCE: Eur. Pat. Appl., 6 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 1544930	A2	20050622	EP 2004-354039	20041202
			<--	
EP 1544930	A3	20070725		
			R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU	
FR 2864348	A1	20050624	FR 2003-14865	20031218
			<--	
FR 2864348	B1	20060310		
US 20050136331	A1	20050623	US 2004-998985	20041130
			<--	
JP 2005183395	A	20050707	JP 2004-368132	20041220
			<--	
CN 1641915	A	20050720	CN 2004-10102151	20041220
			<--	
PRIORITY APPLN. INFO.:			FR 2003-14865	A 20031218
			<--	

ED Entered STN: 24 Jun 2005

AB A lithium battery consists of at least one first electrode consisting of active material into which the Li⁺ cations are able to be inserted, a second electrode, and an electrolyte. The active material in the first electrode consists of a condensed linear composition possessing at least two tetrahedra, resp. of type A04 and A'04, linked by one common oxygen. An ion M2⁺ of a transition metal of oxidation state +2 and chosen from between Ni2⁺, Co2⁺, Mn2⁺, Fe2⁺, and Ti2⁺ is inserted into the condensed linear composition and the ratio between the number of Li⁺ cations which can be inserted into the active material and the number of transition metal M2⁺ ions is strictly greater than 1. A and A' are chosen from between P5⁺, Si4⁺, Al3⁺, S6⁺, Ge4⁺, and B3⁺. One possible active material is Li_xB_mMZ_d(A2O7)_e(A'O3)_f, where X represents at least one alkali metal at an oxidation state of 1⁺ chosen from among Li⁺, Na⁺, K⁺, and M represents at least one transition metal of oxidation state 2⁺ chosen from among Ni2⁺, Co2⁺, Mn2⁺, Fe2⁺, and Ti2⁺, and Z represents at least one transition metal chosen from the group Cu⁺, Ag⁺, Mg2⁺, Ca2⁺, Sr2⁺, Zn2⁺,

V2+, Cu2+, Al3+, Ti3+, Cr3+, Fe3+, Mn3+, Ga3+, V3+, Ge3+, Sn3+, Mo3+, Ti4+, V4+, V5+, Ta5+, Nb5+ and Mo6+, the chemical elements O, S, F, and Cl, and a grouping of type A"O4, and a>1 and b and d≥0, and at least e or f>0. A" is a cation chosen from P5+, Si4+, Al3+, S6+, Ge4+, B3+.

IT 855205-84-4P
(carbon supported; lithium battery showing both high elec.
potential and lithium intercalation capacity)
RN 855205-84-4 HCAPLUS
CN Lithium nickel (diphosphate) metaphosphate (Li3Ni(P2O7)(PO3)2) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
O3P	2	15389-19-2
O7P2	1	14000-31-8
Ni	1	7440-02-0
Li	3	7439-93-2

IT 855205-80-0P, Lithium nickel (diphosphate) phosphate
(Li4Ni3(P2O7)(PO4)2)
(plain and carbon-supported; lithium battery showing both high
elec. potential and lithium intercalation capacity)
RN 855205-80-0 HCAPLUS
CN Lithium nickel (diphosphate) phosphate (Li4Ni3(P2O7)(PO4)2) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
O7P2	1	14000-31-8
Ni	3	7440-02-0
Li	4	7439-93-2

IC ICM H01M004-50
ICS H01M004-52
CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)
Section cross-reference(s): 49
IT 855205-84-4P
(carbon supported; lithium battery showing both high elec.
potential and lithium intercalation capacity)
IT 855205-80-0P, Lithium nickel (diphosphate) phosphate
(Li4Ni3(P2O7)(PO4)2)
(plain and carbon-supported; lithium battery showing both high
elec. potential and lithium intercalation capacity)

L25 ANSWER 3 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2005:283979 HCAPLUS Full-text
DOCUMENT NUMBER: 142:358045
TITLE: Rechargeable lithium battery
INVENTOR(S): Hwang, Duck-Chul; Hwang, Seung-Sik; Lee,
Sang-Mock; Cho, Chung-Kun; Choi, Yun-Suk
PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
SOURCE: U.S. Pat. Appl. Publ., 21 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20050069775	A1	20050331	US 2004-933384	20040903
KR 2005030440	A	20050330	KR 2003-66900	20030926
JP 2005108810	A	20050421	JP 2004-210601	20040716
CN 1601798	A	20050330	CN 2004-10082666	20040927
PRIORITY APPLN. INFO.:				
				KR 2003-66900 A 20030926

ED Entered STN: 03 Apr 2005

AB A rechargeable lithium battery includes a pos. electrode having a pos. active material to reversibly intercalate and deintercalate lithium ions, a neg. electrode having a neg. active material, and an electrolyte, wherein an arithmetic mean Ra of a surface roughness of the pos. electrode is 155 to 419 nm, and an arithmetic mean Ra of a surface roughness of the neg. electrode is 183 to 1159 nm after the rechargeable lithium battery is charged and discharged.

IT 329025-35-6, Iron lithium phosphate (Fe₂Li₁₋₃(PO₄)₃) (rechargeable lithium battery)

RN 329025-35-6 HCAPLUS

CN Iron lithium phosphate (Fe₂Li₁₋₃(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	1 - 3	7439-93-2
Fe	2	7439-89-6

IC ICM H01M004-58

ICS H01M004-48; H01M004-50; H01M004-52

INCL 429231950; 429223000; 429231100; 429231200; 429224000; 429218100;
429231300; 429231000; 429220000; 429221000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 623-53-0,
Ethyl methyl carbonate 1314-62-1, Vanadium oxide (V₂O₅), uses
12031-65-1, Lithium nickel oxide (LiNiO₂) 12057-17-9, Lithium
manganese oxide (LiMn₂O₄) 12162-79-7, Lithium manganese oxide limno2
12162-92-4, Lithium vanadium oxide (LiV₂O₅) 12190-79-3, Cobalt
lithium oxide (CoLiO₂) 13568-36-0, Lithium nickel vanadium oxide
(LiNiVO₄) 21324-40-3, Lithium hexafluorophosphate 179802-95-0,
Cobalt lithium manganese nickel oxide (Co_{0.1}LiMn_{0.1}Ni_{0.8}O₂)
329025-35-6, Iron lithium phosphate (Fe₂Li₁₋₃(PO₄)₃)
(rechargeable lithium battery)

L25 ANSWER 4 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:906086 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 141:382165

TITLE: Solid electrolyte and total solid secondary
battery containing the electrolyte

INVENTOR(S): Ugaji, Masaya; Mino, Shinji; Shibano, Yasuyuki;
Ito, Shuji

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: PCT Int. Appl., 41 pp.

DOCUMENT TYPE: CODEN: PIXXD2
 LANGUAGE: Patent
 FAMILY ACC. NUM. COUNT: Japanese 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004093236	A1	20041028	WO 2004-JP5424	20040415
<--				
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2004335455	A	20041125	JP 2004-119042	20040414
<--				
JP 3690684	B2	20050831		
EP 1630893	A1	20060301	EP 2004-727754	20040415
<--				
R: DE, FR, GB				
CN 1751409	A	20060322	CN 2004-80004511	20040415
<--				
US 20060216611	A1	20060928	US 2005-551935	20051004
<--				
PRIORITY APPLN. INFO.:			JP 2003-113850	A 20030418
<--				
			WO 2004-JP5424	W 20040415

ED Entered STN: 29 Oct 2004

AB The electrolyte, comprising Li, O, P and a transition metal element, is represented by Li_xSTyO_z (T = transition metal; x = 2-7; y = 0.01-1; and z = 3.5-8). The battery has the above electrolyte between a cathode and an anode.

IT 782495-70-9, Lithium tungsten oxide phosphate
 ($\text{Li}_{1.2}\text{W}_{0.100.4}(\text{PO}_4)$) 782495-72-1, Lithium tungsten oxide
 phosphate ($\text{Li}_{1.66}\text{W}_{0.3301.32}(\text{PO}_4)$)
 (solid electrolytes containing lithium transition metal phosphorus
 oxides for secondary batteries)

RN 782495-70-9 HCAPLUS

CN Lithium tungsten oxide phosphate ($\text{Li}_{1.2}\text{W}_{0.100.4}(\text{PO}_4)$) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	0.4	17778-80-2
O4P	1	14265-44-2
W	0.1	7440-33-7
Li	3.2	7439-93-2

RN 782495-72-1 HCAPLUS

CN Lithium tungsten oxide phosphate ($\text{Li}_{1.66}\text{W}_{0.3301.32}(\text{PO}_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.32	17778-80-2
O4P	1	14265-44-2
W	0.33	7440-33-7
Li	3.66	7439-93-2

IT 782495-67-4, Lithium tungsten oxide phosphate
(Li₃5W_{0.25}O₄(PO₄))
(solid electrolytes containing lithium transition metal phosphorus
oxides for secondary batteries)
RN 782495-67-4 HCAPLUS
CN Lithium tungsten oxide phosphate (Li₃5W_{0.25}O₄(PO₄)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
W	0.25	7440-33-7
Li	3.5	7439-93-2

IT 782495-23-2, Lithium titanium metaphosphate oxide
(Li₂8Ti_{0.2}(PO₃)_{0.9}) 782495-24-3, Lithium vanadium
metaphosphate oxide (Li₂8V_{0.2}(PO₃)_{0.9}) 782495-25-4,
Chromium lithium metaphosphate oxide (Cr_{0.2}Li₂8(PO₃)_{0.9})
782495-26-5, Lithium manganese metaphosphate oxide
(Li₂8Mn_{0.2}(PO₃)_{0.9}) 782495-27-6, Iron lithium
metaphosphate oxide (Fe_{0.2}Li₂8(PO₃)_{0.9}) 782495-28-7,
Cobalt lithium metaphosphate oxide (Co_{0.2}Li₂8(PO₃)_{0.9})
782495-29-8, Lithium nickel metaphosphate oxide
(Li₂8Ni_{0.2}(PO₃)_{0.9}) 782495-30-1, Copper lithium
metaphosphate oxide (Cu_{0.2}Li₂8(PO₃)_{0.9}) 782495-31-2,
Lithium zirconium metaphosphate oxide (Li₂8Zr_{0.2}(PO₃)_{0.9})
782495-32-3, Lithium niobium metaphosphate oxide
(Li₂8Nb_{0.2}(PO₃)_{0.9}) 782495-33-4, Lithium molybdenum
metaphosphate oxide (Li₂8Mo_{0.2}(PO₃)_{0.9}) 782495-34-5,
Lithium ruthenium metaphosphate oxide (Li₂8Ru_{0.2}(PO₃)_{0.9})
782495-35-6, Lithium silver metaphosphate oxide
(Li₂8Ag_{0.2}(PO₃)_{0.9}) 782495-36-7, Lithium tantalum
metaphosphate oxide (Li₂8Ta_{0.2}(PO₃)_{0.9}) 782495-37-8,
Lithium tungsten metaphosphate oxide (Li₂8W_{0.2}(PO₃)_{0.9})
782495-38-9, Lithium platinum metaphosphate oxide
(Li₂8Pt_{0.2}(PO₃)_{0.9}) 782495-39-0, Gold lithium
metaphosphate oxide (Au_{0.2}Li₂8(PO₃)_{0.9}) 782495-41-4,
Lithium tungsten metaphosphate oxide (Li₂8W_{0.01}(PO₃)_{0.9})
782495-42-5, Lithium tungsten metaphosphate oxide
(Li₂8W_{0.05}(PO₃)_{0.9}) 782495-43-6, Lithium tungsten
metaphosphate oxide (Li₂8W_{0.1}(PO₃)_{0.9}) 782495-44-7,
Lithium tungsten metaphosphate oxide (Li₂8W_{0.5}(PO₃)_{0.9})
782495-45-8, Lithium tungsten metaphosphate oxide
(Li₂8W_{0.52}(PO₃)_{0.9}) 782495-46-9, Lithium tungsten
metaphosphate oxide (Li₂8W_{0.6}(PO₃)_{0.9}) 782495-47-0,
Lithium vanadium oxide phosphate (Li₂8V_{0.200.4}(PO₄))
782495-48-1, Chromium lithium oxide phosphate
(Cr_{0.2}Li₂800.2(PO₄)) 782495-49-2, Lithium manganese oxide
phosphate (Li₂8Mn_{0.200.3}(PO₄)) 782495-50-5, Iron lithium
oxide phosphate (Fe_{0.2}Li₂800.17(PO₄)) 782495-51-6, Cobalt
lithium oxide phosphate (Co_{0.2}Li₂800.17(PO₄)) 782495-52-7,

Lithium nickel oxide phosphate (Li₂8Ni_{0.200.1}(PO₄))
 782495-53-8, Copper lithium oxide phosphate
 (Cu_{0.2}Li_{2.800.1}(PO₄)) 782495-54-9, Lithium zirconium oxide
 phosphate (Li_{2.8}Zr_{0.200.3}(PO₄)) 782495-55-0, Lithium niobium
 oxide phosphate (Li_{2.8}Nb_{0.200.4}(PO₄)) 782495-56-1, Lithium
 molybdenum oxide phosphate (Li_{2.8}Mo_{0.200.5}(PO₄)) 782495-57-2
 , Lithium silver phosphate (Li_{2.8}Ag_{0.2}(PO₄)) 782495-58-3,
 Lithium tantalum oxide phosphate (Li_{2.8}Ta_{0.200.4}(PO₄))
 782495-59-4, Lithium tungsten oxide phosphate
 (Li_{2.8}W_{0.200.5}(PO₄)) 782495-60-7, Lithium titanium oxide
 phosphate (Li₄Ti_{0.250}(PO₄)) 782495-61-8, Lithium vanadium
 oxide phosphate (Li_{3.75}V_{0.250}(PO₄)) 782495-62-9, Chromium
 lithium oxide phosphate (Cr_{0.25}Li_{3.50}(PO₄)) 782495-63-0,
 Lithium manganese oxide phosphate (Li_{3.25}Mn_{0.250}(PO₄))
 782495-64-1, Lithium niobium oxide phosphate
 (Li_{3.75}Nb_{0.250}(PO₄)) 782495-65-2, Lithium molybdenum oxide
 phosphate (Li_{3.5}Mo_{0.250}(PO₄)) 782495-66-3, Lithium tantalum
 oxide phosphate (Li_{3.75}Ta_{0.250}(PO₄)) 782495-69-6, Lithium
 tungsten oxide phosphate (Li_{3.02}W_{0.0100.04}(PO₄)) 782495-74-3
 , Lithium tungsten oxide phosphate (Li₅W_{0.4}(PO₄)) 782495-76-5
 , Lithium tungsten oxide phosphate (Li₇W₂₀₈(PO₄))
 (solid electrolytes containing lithium transition metal phosphorus
 oxides for secondary batteries)

RN 782495-23-2 HCAPLUS

CN Lithium titanium metaphosphate oxide (Li_{2.8}Ti_{0.2}(PO₃)O_{0.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ti	0.2	7440-32-6
Li	2.8	7439-93-2

RN 782495-24-3 HCAPLUS

CN Lithium vanadium metaphosphate oxide (Li_{2.8}V_{0.2}(PO₃)O_{0.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
V	0.2	7440-62-2
Li	2.8	7439-93-2

RN 782495-25-4 HCAPLUS

CN Chromium lithium metaphosphate oxide (Cr_{0.2}Li_{2.8}(PO₃)O_{0.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Cr	0.2	7440-47-3
Li	2.8	7439-93-2

RN 782495-26-5 HCAPLUS

CN Lithium manganese metaphosphate oxide (Li₂8Mn_{0.2}(PO₃)_{00.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Mn	0.2	7439-96-5
Li	2.8	7439-93-2

RN 782495-27-6 HCAPLUS

CN Iron lithium metaphosphate oxide (Fe_{0.2}Li_{2.8}(PO₃)_{00.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Li	2.8	7439-93-2
Fe	0.2	7439-89-6

RN 782495-28-7 HCAPLUS

CN Cobalt lithium metaphosphate oxide (Co_{0.2}Li_{2.8}(PO₃)_{00.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Co	0.2	7440-48-4
Li	2.8	7439-93-2

RN 782495-29-8 HCAPLUS

CN Lithium nickel metaphosphate oxide (Li_{2.8}Ni_{0.2}(PO₃)_{00.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ni	0.2	7440-02-0
Li	2.8	7439-93-2

RN 782495-30-1 HCAPLUS

CN Copper lithium metaphosphate oxide (Cu_{0.2}Li_{2.8}(PO₃)_{00.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Cu	0.2	7440-50-8
Li	2.8	7439-93-2

RN 782495-31-2 HCAPLUS

CN Lithium zirconium metaphosphate oxide (Li₂8Zr0.2(PO₃)O_{0.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Zr	0.2	7440-67-7
Li	2.8	7439-93-2

RN 782495-32-3 HCAPLUS

CN Lithium niobium metaphosphate oxide (Li₂8Nb0.2(PO₃)O_{0.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Nb	0.2	7440-03-1
Li	2.8	7439-93-2

RN 782495-33-4 HCAPLUS

CN Lithium molybdenum metaphosphate oxide (Li₂8Mo0.2(PO₃)O_{0.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Mo	0.2	7439-98-7
Li	2.8	7439-93-2

RN 782495-34-5 HCAPLUS

CN Lithium ruthenium metaphosphate oxide (Li₂8Ru0.2(PO₃)O_{0.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ru	0.2	7440-18-8
Li	2.8	7439-93-2

RN 782495-35-6 HCAPLUS

CN Lithium silver metaphosphate oxide (Li₂8Ag0.2(PO₃)O_{0.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ag	0.2	7440-22-4
Li	2.8	7439-93-2

RN 782495-36-7 HCAPLUS

CN Lithium tantalum metaphosphate oxide (Li2.8Ta0.2(P03)00.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Ta	0.2	7440-25-7
Li	2.8	7439-93-2

RN 782495-37-8 HCAPLUS

CN Lithium tungsten metaphosphate oxide (Li2.8W0.2(P03)00.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.2	7440-33-7
Li	2.8	7439-93-2

RN 782495-38-9 HCAPLUS

CN Lithium platinum metaphosphate oxide (Li2.8Pt0.2(P03)00.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Pt	0.2	7440-06-4
Li	2.8	7439-93-2

RN 782495-39-0 HCAPLUS

CN Gold lithium metaphosphate oxide (Au0.2Li2.8(P03)00.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
Au	0.2	7440-57-5
Li	2.8	7439-93-2

RN 782495-41-4 HCAPLUS

CN Lithium tungsten metaphosphate oxide (Li2.8W0.01(P03)00.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.01	7440-33-7
Li	2.8	7439-93-2

RN 782495-42-5 HCAPLUS

CN Lithium tungsten metaphosphate oxide (Li2.8W0.05(P03)00.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.05	7440-33-7
Li	2.8	7439-93-2

RN 782495-43-6 HCAPLUS

CN Lithium tungsten metaphosphate oxide (Li2.8W0.1(P03)00.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.1	7440-33-7
Li	2.8	7439-93-2

RN 782495-44-7 HCAPLUS

CN Lithium tungsten metaphosphate oxide (Li2.8W0.5(P03)00.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.5	7440-33-7
Li	2.8	7439-93-2

RN 782495-45-8 HCAPLUS

CN Lithium tungsten metaphosphate oxide (Li2.8W0.52(P03)00.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.52	7440-33-7
Li	2.8	7439-93-2

RN 782495-46-9 HCAPLUS

CN Lithium tungsten metaphosphate oxide (Li2.8W0.6(P03)00.9) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.9	17778-80-2
O3P	1	15389-19-2
W	0.6	7440-33-7
Li	2.8	7439-93-2

RN 782495-47-0 HCAPLUS

CN Lithium vanadium oxide phosphate (Li2.8V0.200.4(P04)) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	0.4	17778-80-2
O4P	1	14265-44-2
V	0.2	7440-62-2
Li	2.8	7439-93-2

RN 782495-48-1 HCAPLUS

CN Chromium lithium oxide phosphate (Cr0.2Li2.800.2(P04)) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	0.2	17778-80-2
O4P	1	14265-44-2
Cr	0.2	7440-47-3
Li	2.8	7439-93-2

RN 782495-49-2 HCAPLUS

CN Lithium manganese oxide phosphate (Li2.8Mn0.200.3(P04)) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	0.3	17778-80-2
O4P	1	14265-44-2
Mn	0.2	7439-96-5
Li	2.8	7439-93-2

RN 782495-50-5 HCAPLUS

CN Iron lithium oxide phosphate (Fe0.2Li2.800.17(P04)) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	0.17	17778-80-2
O4P	1	14265-44-2
Li	2.8	7439-93-2
Fe	0.2	7439-89-6

RN 782495-51-6 HCAPLUS

CN Cobalt lithium oxide phosphate (Co0.2Li2.800.17(P04)) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	0.17	17778-80-2
O4P	1	14265-44-2
Co	0.2	7440-48-4
Li	2.8	7439-93-2

RN 782495-52-7 HCAPLUS

CN Lithium nickel oxide phosphate (Li2.8Ni0.200.1(P04)) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
O	0.1	17778-80-2
O4P	1	14265-44-2
Ni	0.2	7440-02-0
Li	2.8	7439-93-2

RN 782495-53-8 HCAPLUS

CN Copper lithium oxide phosphate (Cu0.2Li2.8O0.1(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.1	17778-80-2
O4P	1	14265-44-2
Cu	0.2	7440-50-8
Li	2.8	7439-93-2

RN 782495-54-9 HCAPLUS

CN Lithium zirconium oxide phosphate (Li2.8Zr0.2O0.3(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.3	17778-80-2
O4P	1	14265-44-2
Zr	0.2	7440-67-7
Li	2.8	7439-93-2

RN 782495-55-0 HCAPLUS

CN Lithium niobium oxide phosphate (Li2.8Nb0.2O0.4(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.4	17778-80-2
O4P	1	14265-44-2
Nb	0.2	7440-03-1
Li	2.8	7439-93-2

RN 782495-56-1 HCAPLUS

CN Lithium molybdenum oxide phosphate (Li2.8Mo0.2O0.5(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.5	17778-80-2
O4P	1	14265-44-2
Mo	0.2	7439-98-7
Li	2.8	7439-93-2

RN 782495-57-2 HCAPLUS

CN Lithium silver phosphate (Li2.8Ag0.2(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2

Ag		0.2		7440-22-4
Li		2.8		7439-93-2

RN 782495-58-3 HCAPLUS

CN Lithium tantalum oxide phosphate (Li_{2.8}Ta_{0.200.4}(PO₄)) (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====	+	=====	+	=====
O		0.4		17778-80-2
O4P		1		14265-44-2
Ta		0.2		7440-25-7
Li		2.8		7439-93-2

RN 782495-59-4 HCAPLUS

CN Lithium tungsten oxide phosphate (Li_{2.8}W_{0.200.5}(PO₄)) (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====	+	=====	+	=====
O		0.5		17778-80-2
O4P		1		14265-44-2
W		0.2		7440-33-7
Li		2.8		7439-93-2

RN 782495-60-7 HCAPLUS

CN Lithium titanium oxide phosphate (Li₄Ti_{0.250}(PO₄)) (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====	+	=====	+	=====
O		1		17778-80-2
O4P		1		14265-44-2
Ti		0.25		7440-32-6
Li		4		7439-93-2

RN 782495-61-8 HCAPLUS

CN Lithium vanadium oxide phosphate (Li_{3.75}V_{0.250}(PO₄)) (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====	+	=====	+	=====
O		1		17778-80-2
O4P		1		14265-44-2
V		0.25		7440-62-2
Li		3.75		7439-93-2

RN 782495-62-9 HCAPLUS

CN Chromium lithium oxide phosphate (Cr_{0.25}Li_{3.50}(PO₄)) (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====	+	=====	+	=====
O		1		17778-80-2
O4P		1		14265-44-2
Cr		0.25		7440-47-3
Li		3.5		7439-93-2

RN 782495-63-0 HCAPLUS

CN Lithium manganese oxide phosphate (Li3.25Mn0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Mn	0.25	7439-96-5
Li	3.25	7439-93-2

RN 782495-64-1 HCAPLUS

CN Lithium niobium oxide phosphate (Li3.75Nb0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Nb	0.25	7440-03-1
Li	3.75	7439-93-2

RN 782495-65-2 HCAPLUS

CN Lithium molybdenum oxide phosphate (Li3.5Mo0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Mo	0.25	7439-98-7
Li	3.5	7439-93-2

RN 782495-66-3 HCAPLUS

CN Lithium tantalum oxide phosphate (Li3.75Ta0.25O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Ta	0.25	7440-25-7
Li	3.75	7439-93-2

RN 782495-69-6 HCAPLUS

CN Lithium tungsten oxide phosphate (Li3.02W0.0100.04(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.04	17778-80-2
O4P	1	14265-44-2
W	0.01	7440-33-7
Li	3.02	7439-93-2

RN 782495-74-3 HCAPLUS

CN Lithium tungsten oxide phosphate (Li5W04(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
O4P	1	14265-44-2
W	1	7440-33-7
Li	5	7439-93-2

RN 782495-76-5 HCAPLUS

CN Lithium tungsten oxide phosphate (Li7W2O8(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	8	17778-80-2
O4P	1	14265-44-2
W	2	7440-33-7
Li	7	7439-93-2

IC ICM H01M010-36

ICS H01B001-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 782495-70-9, Lithium tungsten oxide phosphate (Li3.2W0.100.4(PO4)) 782495-72-1, Lithium tungsten oxide phosphate (Li3.66W0.3301.32(PO4)) (solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)

IT 782495-67-4, Lithium tungsten oxide phosphate (Li3.5W0.250(PO4)) (solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)

IT 12190-79-3, Cobalt lithium oxide (CoLiO2) 782495-23-2, Lithium titanium metaphosphate oxide (Li2.8Ti0.2(PO3)O0.9) 782495-24-3, Lithium vanadium metaphosphate oxide (Li2.8V0.2(PO3)O0.9) 782495-25-4, Chromium lithium metaphosphate oxide (Cr0.2Li2.8(PO3)O0.9) 782495-26-5, Lithium manganese metaphosphate oxide (Li2.8Mn0.2(PO3)O0.9) 782495-27-6, Iron lithium metaphosphate oxide (Fe0.2Li2.8(PO3)O0.9) 782495-28-7, Cobalt lithium metaphosphate oxide (Co0.2Li2.8(PO3)O0.9) 782495-29-8, Lithium nickel metaphosphate oxide (Li2.8Ni0.2(PO3)O0.9) 782495-30-1, Copper lithium metaphosphate oxide (Cu0.2Li2.8(PO3)O0.9) 782495-31-2, Lithium zirconium metaphosphate oxide (Li2.8Zr0.2(PO3)O0.9) 782495-32-3, Lithium niobium metaphosphate oxide (Li2.8Nb0.2(PO3)O0.9) 782495-33-4, Lithium molybdenum metaphosphate oxide (Li2.8Mo0.2(PO3)O0.9) 782495-34-5, Lithium ruthenium metaphosphate oxide (Li2.8Ru0.2(PO3)O0.9) 782495-35-6, Lithium silver metaphosphate oxide (Li2.8Ag0.2(PO3)O0.9) 782495-36-7, Lithium tantalum metaphosphate oxide (Li2.8Ta0.2(PO3)O0.9) 782495-37-8, Lithium tungsten metaphosphate oxide (Li2.8W0.2(PO3)O0.9) 782495-38-9, Lithium platinum metaphosphate oxide (Li2.8Pt0.2(PO3)O0.9) 782495-39-0, Gold lithium metaphosphate oxide (Au0.2Li2.8(PO3)O0.9) 782495-40-3, Lithium metaphosphate oxide (Li2.8(PO3)O0.9) 782495-41-4, Lithium tungsten metaphosphate oxide (Li2.8W0.01(PO3)O0.9) 782495-42-5, Lithium tungsten metaphosphate oxide (Li2.8W0.05(PO3)O0.9) 782495-43-6, Lithium tungsten metaphosphate oxide (Li2.8W0.1(PO3)O0.9)

782495-44-7, Lithium tungsten metaphosphate oxide (Li₂8W0.5(P03)00.9) 782495-45-8, Lithium tungsten metaphosphate oxide (Li₂8W0.52(P03)00.9) 782495-46-9, Lithium tungsten metaphosphate oxide (Li₂8W0.6(P03)00.9) 782495-47-8, Lithium vanadium oxide phosphate (Li₂8V0.200.4(P04)) 782495-48-1, Chromium lithium oxide phosphate (Cr0.2Li₂800.2(P04)) 782495-49-2, Lithium manganese oxide phosphate (Li₂8Mn0.200.3(P04)) 782495-50-5, Iron lithium oxide phosphate (Fe0.2Li₂800.17(P04)) 782495-51-6, Cobalt lithium oxide phosphate (Co0.2Li₂800.17(P04)) 782495-52-7, Lithium nickel oxide phosphate (Li₂8Ni0.200.1(P04)) 782495-53-8, Copper lithium oxide phosphate (Cu0.2Li₂800.1(P04)) 782495-54-9, Lithium zirconium oxide phosphate (Li₂8Zr0.200.3(P04)) 782495-55-0, Lithium niobium oxide phosphate (Li₂8Nb0.200.4(P04)) 782495-56-1, Lithium molybdenum oxide phosphate (Li₂8Mo0.200.5(P04)) 782495-57-2, Lithium silver phosphate (Li₂8Ag0.2(P04)) 782495-58-3, Lithium tantalum oxide phosphate (Li₂8Ta0.200.4(P04)) 782495-59-4, Lithium tungsten oxide phosphate (Li₂8W0.200.5(P04)) 782495-60-7, Lithium titanium oxide phosphate (Li₄Ti0.250(P04)) 782495-61-8, Lithium vanadium oxide phosphate (Li₃75V0.250(P04)) 782495-62-9, Chromium lithium oxide phosphate (Cr0.25Li₃.50(P04)) 782495-63-0, Lithium manganese oxide phosphate (Li₃25Mn0.250(P04)) 782495-64-1, Lithium niobium oxide phosphate (Li₃75Nb0.250(P04)) 782495-65-2, Lithium molybdenum oxide phosphate (Li₃5Mo0.250(P04)) 782495-66-3, Lithium tantalum oxide phosphate (Li₃75Ta0.250(P04)) 782495-69-6, Lithium tungsten oxide phosphate (Li₃02W0.0100.04(P04)) 782495-74-3, Lithium tungsten oxide phosphate (Li₅W04(P04)) 782495-76-5, Lithium tungsten oxide phosphate (Li₇W208(P04))

(solid electrolytes containing lithium transition metal phosphorus oxides for secondary batteries)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 5 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2004:824972 HCAPLUS Full-text
 DOCUMENT NUMBER: 141:334894
 TITLE: Battery electrodes comprising mixed active particles
 INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Kelley, Tracy E.
 PATENT ASSIGNEE(S): Valence Technology, Inc., USA
 SOURCE: U.S. Pat. Appl. Publ., 40 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 3
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20040197654	A1	200411007	US 2003-406890	20030403
			<--	
US 7041239	B2	20060509		
CA 2520876	A1	20041104	CA 2004-2520876	20040322
			<--	
WO 2004095607	A2	20041104	WO 2004-US8839	20040322

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WO 2004095607 A3 20050922
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
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 US 20060194112 A1 20060831 US 2006-381602 20060504
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 US 20070141468 A1 20070621 US 2007-676707 20070220
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 PRIORITY APPLN. INFO.: US 2003-406890 A 20030403
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 WO 2004-US8839 W 20040322
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 US 2006-381602 A2 20060504

ED Entered STN: 08 Oct 2004

AB Electrode active materials comprising two or more groups of particles having differing chemical compns., wherein each group of particles comprises a material selected from: (a) materials of the formula AlaM1b(XY4)cZd ; and (b) materials of the formula A2eM2fOg ; and wherein (i) A1, A2, and A3 are Li, Na, or K; (ii) M1 and M3 comprise a transition metal; (iv) XY4 a phosphate or similar moiety; and (v) Z is OH, or halogen. In a preferred embodiment, A2eM3fOg is A3hMnO4 having an inner and an outer region, wherein the inner region comprises a cubic spinel manganese oxide, and the outer region comprises a manganese oxide enriched in Mn+4 relative to the inner region. In a preferred embodiment, the compns. also comprise a basic compound

IT 484039-94-1, Cobalt lithium fluoride phosphate CoLi2F(PO4)
 484039-96-3, Iron lithium fluoride phosphate FeLi2F(PO4)
 484039-98-5, Iron lithium magnesium fluoride phosphate
 $\text{Fe0.9Li2Mg0.1F(PO4)}$ 484039-95-4, Lithium manganese fluoride
 phosphate Li2MnF(PO4) 771556-75-3 771556-77-5

(battery electrodes comprising mixed active particles)

RN 484039-84-1 HCAPLUS

CN Cobalt lithium fluoride phosphate (CoLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component
=====	=====	=====
F	1	14762-94-8
O4P	1	14265-44-2
Co	1	7440-48-4
Li	2	7439-93-2

RN 484039-86-3 HCAPLUS

CN Iron lithium fluoride phosphate (FeLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

RN 484039-88-5 HCAPLUS

CN Iron lithium magnesium fluoride phosphate (Fe0.9Li2Mg0.1F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mg	0.1	7439-95-4
Li	2	7439-93-2
Fe	0.9	7439-89-6

RN 484039-95-4 HCAPLUS

CN Lithium manganese fluoride phosphate (Li2MnF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2

RN 771556-75-3 HCAPLUS

CN Iron lithium magnesium fluoride phosphate (Fe0.8Li2Mg0.2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mg	0.2	7439-95-4
Li	2	7439-93-2
Fe	0.8	7439-89-6

RN 771556-77-5 HCAPLUS

CN Iron lithium magnesium fluoride phosphate (Fe0.95Li2Mg0.05F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mg	0.05	7439-95-4
Li	2	7439-93-2

Fe | 0.95 | 7439-89-6

IC ICM H01M004-58
ICS H01M004-50

INCL 429218100; X42-923.11; X42-922.4; X42-922.1; X42-922.3; X42-923.15;
X42-923.19; X42-923.195; X25-218.21; X42-923.16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 12031-65-1, Lithium nickel oxide linio2 12162-92-4, Lithium vanadium oxide liiv2o5 12190-79-3, Cobalt lithium oxide colio2 12527-46-7, Copper lithium oxide culio2 13826-59-0, Lithium manganese phosphate limnpo4 14066-20-7, Dihydrogen phosphate, uses 15365-14-7, Iron lithium phosphate felipo4 39457-42-6, Lithium manganese oxide 131344-56-4, Cobalt lithium nickel oxide 142585-37-3, Copper lithium oxide culio2 143623-49-8, Cobalt lithium nickel oxide Co0.25LiNi0.75O2 193214-24-3, Aluminum cobalt lithium nickel oxide Al0.05Co0.15LiNi0.8O2 349632-85-5, Iron lithium magnesium phosphate Fe0.8LiMg0.2(PO4) 405914-53-6, Cobalt lithium magnesium phosphate Co0.9LiMg0.1(PO4) 484039-84-1, Cobalt lithium fluoride phosphate CoLi2F(PO4) 484039-86-3, Iron lithium fluoride phosphate FeLi2F(PO4) 484039-88-5, Iron lithium magnesium fluoride phosphate Fe0.9Li2Mg0.1F(PO4) 484039-95-4, Lithium manganese fluoride phosphate Li2MnF(PO4) 610271-90-4, Aluminum cobalt iron lithium magnesium manganese phosphate Al0.02Co0.7Fe0.08Li1.02Mg0.05Mn0.12(PO4) 610271-94-8, Aluminum cobalt iron lithium magnesium phosphate Al0.02Co0.8Fe0.1Li1.02Mg0.05(PO4) 610271-97-1, Aluminum cobalt iron lithium magnesium phosphate Al0.02Co0.75Fe0.15Li1.02Mg0.05(PO4) 610272-06-5, Aluminum cobalt iron lithium titanium phosphate Al0.02Co0.8Fe0.1Li1.02Ti0.02(PO4) 610310-97-9, Cobalt iron lithium magnesium titanium phosphate Co0.8Fe0.1LiMg0.05Ti0.02(PO4) 610321-55-6, Cobalt iron lithium magnesium titanium fluoride metaphosphate oxide Co0.8Fe0.1Li1.02Mg0.02Ti0.02F0.02(PO3)00.98 610321-57-8, Cobalt iron lithium magnesium titanium phosphate Co0.82Fe0.1LiMg0.02Ti0.02(PO4) 610321-60-3, Aluminum cobalt iron lithium magnesium fluoride metaphosphate oxide Al0.02Co0.8Fe0.1LiMg0.05F0.02(PO3)00.98 610754-69-3, Aluminum calcium cobalt iron lithium fluoride metaphosphate oxide Al0.02Ca0.05Co0.8Fe0.1LiF0.02(PO3)00.98 632286-77-2, Iron lithium magnesium phosphate Fe0.9LiMg0.1PO4 632286-77-2, Iron lithium magnesium phosphate Fe0.9LiMg0.1(PO4) 643752-34-5, Iron lithium magnesium phosphate Fe0.95LiMg0.05(PO4) 643752-34-5, Iron lithium magnesium phosphate (Fe0.95LiMg0.05(PO4)) 771556-73-1, Aluminum cobalt iron lithium phosphate (Al0.02Co0.85Fe0.05Li1.02(PO4)) 771556-74-2 771556-75-3 771556-77-5 (battery electrodes comprising mixed active particles)

REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 6 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:759266 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 141:280353

TITLE: Production of lithium compound phosphate cathodes for secondary lithium ion batteries

INVENTOR(S): Ishizuka, Masayuki; Ono, Koji; Toge, Yoshiyuki; Saito, Mitsumasa

PATENT ASSIGNEE(S): Sumitomo Osaka Cement Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp. CODEN: JKXXAF

DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004259471	A	20040916	JP 2003-45885	20030224
			<--	
PRIORITY APPLN. INFO.:			JP 2003-45885	20030224
			<--	

ED Entered STIN: 17 Sep 2004

AB The lithium compound phosphates, having olivine-type structure, are produced by a process including steps of (1) spray thermal decomposition of solns. or suspensions containing Li, metals excluding Li, and P, and (2) firing the resultant decomposition products. The phosphates may be expressed by Li_xAyPO_4 ($A = \text{Cr, Mn, Fe, Co, Ni, Cu}$; $0 < x < 2$; $0 < y \leq 1$). In the production, elec. conductive substances and/or their precursors may be added to the solns./suspensions. The cathodes can be economically produced, and secondary lithium batteries employing the cathodes show high discharge capacity.

IT 757954-84-9, Chromium lithium phosphate ($\text{CrO-1LiO-2(PO}_4\text{)}$)
 757954-86-2, Lithium manganese phosphate ($\text{LiO-2MnO-1(PO}_4\text{)}$)
 757954-88-4, Lithium nickel phosphate ($\text{LiO-2NiO-1(PO}_4\text{)}$)
 757954-90-8, Copper lithium phosphate ($\text{CuO-1LiO-2(PO}_4\text{)}$)
 (cathodes; preparation of lithium (transition) metal phosphate cathodes for lithium ion batteries by spray thermal decomposition and firing)

RN 757954-84-0 HCAPLUS

CN Chromium lithium phosphate ($\text{CrO-1LiO-2(PO}_4\text{)}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4P	1	14265-44-2
Cr	0 - 1	7440-47-3
Li	0 - 2	7439-93-2

RN 757954-86-2 HCAPLUS

CN Lithium manganese phosphate ($\text{LiO-2MnO-1(PO}_4\text{)}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4P	1	14265-44-2
Mn	0 - 1	7439-96-5
Li	0 - 2	7439-93-2

RN 757954-88-4 HCAPLUS

CN Lithium nickel phosphate ($\text{LiO-2NiO-1(PO}_4\text{)}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4P	1	14265-44-2
Ni	0 - 1	7440-02-0
Li	0 - 2	7439-93-2

RN 757954-90-8 HCAPLUS

CN Copper lithium phosphate ($\text{CuO-1LiO-2(PO}_4\text{)}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
O4P	1	14265-44-2
Cu	0 - 1	7440-50-8
Li	0 - 2	7439-93-2

IT 757954-80-6P, Cobalt lithium phosphate (Co0-1Li0-2(P04))
 757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(P04))
 (cathodes; preparation of lithium (transition) metal phosphate cathodes
 for lithium ion batteries by spray thermal decomposition and firing)
 RN 757954-80-6 HCAPLUS
 CN Cobalt lithium phosphate (Co0-1Li0-2(P04)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0 - 1	7440-48-4
Li	0 - 2	7439-93-2

RN 757954-82-8 HCAPLUS
 CN Iron lithium phosphate (Fe0-1Li0-2(P04)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 2	7439-93-2
Fe	0 - 1	7439-89-6

IC ICM H01M004-58
 ICS C01B025-45; H01M004-62; H01M004-02; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)
 IT 757954-84-8, Chromium lithium phosphate (Cr0-1Li0-2(P04))
 757954-86-2, Lithium manganese phosphate (Li0-2Mn0-1(P04))
 757954-88-4, Lithium nickel phosphate (Li0-2Ni0-1(P04))
 757954-90-8, Copper lithium phosphate (Cu0-1Li0-2(P04))
 (cathodes; preparation of lithium (transition) metal phosphate cathodes
 for lithium ion batteries by spray thermal decomposition and firing)
 IT 757954-80-6P, Cobalt lithium phosphate (Co0-1Li0-2(P04))
 757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(P04))
 (cathodes; preparation of lithium (transition) metal phosphate cathodes
 for lithium ion batteries by spray thermal decomposition and firing)

L25 ANSWER 7 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:759265 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 141:280352

TITLE: Lithium transition metal phosphate cathodes for
 lithium ion batteries

INVENTOR(S): Ishizuka, Masayuki; Ono, Koji; Yamada, Satoshi;
 Toge, Yoshiyuki; Saito, Mitsumasa

PATENT ASSIGNEE(S): Sumitomo Osaka Cement Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004259470	A	20040916	JP 2003-45884	20030224
PRIORITY APPLN. INFO.:			JP 2003-45884	20030224

ED Entered STN: 17 Sep 2004

AB The cathodes are expressed by olivine-type Li_xAyPO_4 ($A = \text{Cr, Mn, Fe, Co, Ni, Cu}$; $0 < x < 2$; $0 < y \leq 1$) with crystallite diameter of ≤ 35 nm. The cathodes can be economically produced, and secondary lithium batteries employing the cathodes show high discharge capacity.

IT 757954-84-0, Chromium lithium phosphate ($\text{CrO-1LiO-2(PO}_4\text{)}$)
 757954-86-2, Lithium manganese phosphate ($\text{LiO-2MnO-1(PO}_4\text{)}$)
 757954-88-4, Lithium nickel phosphate ($\text{LiO-2NiO-1(PO}_4\text{)}$)
 757954-90-8, Copper lithium phosphate ($\text{CuO-1LiO-2(PO}_4\text{)}$)
 (cathodes; lithium transition metal phosphate cathodes for lithium ion batteries)

RN 757954-84-0 HCAPLUS

CN Chromium lithium phosphate ($\text{CrO-1LiO-2(PO}_4\text{)}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cr	0 - 1	7440-47-3
Li	0 - 2	7439-93-2

RN 757954-86-2 HCAPLUS

CN Lithium manganese phosphate ($\text{LiO-2MnO-1(PO}_4\text{)}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Mn	0 - 1	7439-96-5
Li	0 - 2	7439-93-2

RN 757954-88-4 HCAPLUS

CN Lithium nickel phosphate ($\text{LiO-2NiO-1(PO}_4\text{)}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Ni	0 - 1	7440-02-0
Li	0 - 2	7439-93-2

RN 757954-90-8 HCAPLUS

CN Copper lithium phosphate ($\text{CuO-1LiO-2(PO}_4\text{)}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Cu	0 - 1	7440-50-8
Li	0 - 2	7439-93-2

IT 757954-80-6P, Cobalt lithium phosphate ($\text{CoO-1LiO-2(PO}_4\text{)}$)757954-82-8P, Iron lithium phosphate ($\text{FeO-1LiO-2(PO}_4\text{)}$)

(cathodes; lithium transition metal phosphate cathodes for lithium

ion batteries)

RN 757954-80-6 HCAPLUS

CN Cobalt lithium phosphate (Co0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Co	0 - 1	7440-48-4
Li	0 - 2	7439-93-2

RN 757954-82-8 HCAPLUS

CN Iron lithium phosphate (Fe0-1Li0-2(PO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	0 - 2	7439-93-2
Fe	0 - 1	7439-89-6

IC ICM H01M004-58

ICS C01B025-45; H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 757954-84-6, Chromium lithium phosphate (Cr0-1Li0-2(PO4))
 757954-86-2, Lithium manganese phosphate (Li0-2Mn0-1(PO4))
 757954-88-4, Lithium nickel phosphate (Li0-2Ni0-1(PO4))
 757954-90-8, Copper lithium phosphate (Cu0-1Li0-2(PO4))
 (cathodes; lithium transition metal phosphate cathodes for lithium ion batteries)

IT 757954-80-6P, Cobalt lithium phosphate (Co0-1Li0-2(PO4))
 757954-82-8P, Iron lithium phosphate (Fe0-1Li0-2(PO4))
 (cathodes; lithium transition metal phosphate cathodes for lithium ion batteries)

L25 ANSWER 8 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2004:632469 HCAPLUS Full-text

DOCUMENT NUMBER: 141:176832

TITLE: Nonaqueous electrolyte lithium ion secondary battery containing lithium-based composite metal oxide for improved discharge capacity and thermal stability

INVENTOR(S): Kubo, Koichi

PATENT ASSIGNEE(S): Toshiba Corp., Japan

SOURCE: Jpn. Kokai Tokyo Koho, 15 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004220801	A	20040805	JP 2003-3291	20030109
JP 3887317	B2	20070228	<--	
PRIORITY APPLN. INFO.:			JP 2003-3291	20030109
			<--	

ED Entered STN: 06 Aug 2004

AB Disclosed is the nonaq. electrolyte lithium ion secondary battery comprising (a) a pos. electrode containing a metal oxide $\text{Li}_2\text{-xM}_1\text{-yM}'\text{yXzAO}_4$ ($\text{M} = \text{Ti, Nb, etc.}; \text{M}' = \text{V, Cr, Mn, etc.}; \text{X} = \text{O, F}; \text{A} = \text{Si, Ge, P, S}; 0 \leq x \leq 2; 0 \leq y \leq 0.5; \text{ and } 0.5 \leq z \leq 1.5$) having the tetragonal crystal structure, (b) a neg. electrode, and (c) a nonaq. electrolyte.

IT 732298-51-6, Lithium molybdenum oxide phosphate ($\text{Li}_2\text{MoO}(\text{PO}_4)$)
 732298-52-1, Lithium niobium oxide phosphate ($\text{Li}_2\text{NbO}(\text{PO}_4)$)
 732298-53-2, Lithium tantalum oxide phosphate ($\text{Li}_2\text{TaO}(\text{PO}_4)$)
 732298-54-3, Lithium tungsten oxide phosphate ($\text{Li}_2\text{WO}(\text{PO}_4)$)
 732298-55-4, Iron lithium molybdenum oxide phosphate
 ($\text{Fe}_0.33\text{Li}_2\text{Mo}_0.67\text{O}(\text{PO}_4)$) 732298-58-7 732298-59-8,
 Iron lithium tantalum fluoride phosphate ($\text{Fe}_0.5\text{Li}_2\text{Ta}_0.5\text{F}(\text{PO}_4)$)
 732298-60-1 732298-61-2 732298-62-3
 732298-66-7, Lithium molybdenum oxide phosphate
 ($\text{Li}_2\text{MoO}_1.5(\text{PO}_4)$) 732298-67-8, Lithium titanium oxide
 phosphate ($\text{Li}_2\text{TiO}_0.5(\text{PO}_4)$)
 (pos. electrode of nonaq. electrolyte lithium ion secondary
 battery)

RN 732298-51-0 HCAPLUS
 CN Lithium molybdenum oxide phosphate ($\text{Li}_2\text{MoO}(\text{PO}_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Mo	1	7439-98-7
Li	2	7439-93-2

RN 732298-52-1 HCAPLUS
 CN Lithium niobium oxide phosphate ($\text{Li}_2\text{NbO}(\text{PO}_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Nb	1	7440-03-1
Li	2	7439-93-2

RN 732298-53-2 HCAPLUS
 CN Lithium tantalum oxide phosphate ($\text{Li}_2\text{TaO}(\text{PO}_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Ta	1	7440-25-7
Li	2	7439-93-2

RN 732298-54-3 HCAPLUS
 CN Lithium tungsten oxide phosphate ($\text{Li}_2\text{WO}(\text{PO}_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
W	1	7440-33-7

Li | 2 | 7439-93-2

RN 732298-55-4 HCAPLUS

CN Iron lithium molybdenum oxide phosphate (Fe0.33Li2Mo0.67O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Mo	0.67	7439-98-7
Li	2	7439-93-2
Fe	0.33	7439-89-6

RN 732298-58-7 HCAPLUS

CN Lithium molybdenum ruthenium oxide phosphate (Li2Mo0.9Ru0.1O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Ru	0.1	7440-18-8
Mo	0.9	7439-98-7
Li	2	7439-93-2

RN 732298-59-8 HCAPLUS

CN Iron lithium tantalum fluoride phosphate (Fe0.5Li2Ta0.5F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Ta	0.5	7440-25-7
Li	2	7439-93-2
Fe	0.5	7439-89-6

RN 732298-60-1 HCAPLUS

CN Lithium molybdenum titanium oxide phosphate (Li2Mo0.5Ti0.5O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4P	1	14265-44-2
Ti	0.5	7440-32-6
Mo	0.5	7439-98-7
Li	2	7439-93-2

RN 732298-61-2 HCAPLUS

CN Lithium molybdenum rhodium oxide phosphate (Li2Mo0.9Rh0.1O(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
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O		1	
O4P		1	
Rh		0.1	
Mo		0.9	
Li		2	

RN 732298-62-3 HCAPLUS

CN Lithium molybdenum niobium oxide phosphate (Li2Mo0.5Nb0.5O(P04)) (CA INDEX NAME)

Component		Ratio		Component	
				Registry Number	
O		1		17778-80-2	
O4P		1		14265-44-2	
Nb		0.5		7440-03-1	
Mo		0.5		7439-98-7	
Li		2		7439-93-2	

RN 732298-66-7 HCAPLUS

CN Lithium molybdenum oxide phosphate (Li2Mo0.5O(P04)) (CA INDEX NAME)

Component		Ratio		Component	
				Registry Number	
O		1.5		17778-80-2	
O4P		1		14265-44-2	
Mo		1		7439-98-7	
Li		2		7439-93-2	

RN 732298-67-8 HCAPLUS

CN Lithium titanium oxide phosphate (Li2Ti0.5O(P04)) (CA INDEX NAME)

Component		Ratio		Component	
				Registry Number	
O		0.5		17778-80-2	
O4P		1		14265-44-2	
Ti		1		7440-32-6	
Li		2		7439-93-2	

IC ICM H01M004-58

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 530740-14-8, Molybdenum oxide phosphate (Mo2O3(P04)2)
 732298-51-0, Lithium molybdenum oxide phosphate (Li2MoO(P04))
 732298-52-1, Lithium niobium oxide phosphate (Li2NbO(P04))
 732298-53-2, Lithium tantalum oxide phosphate (Li2TaO(P04))
 732298-54-3, Lithium tungsten oxide phosphate (Li2WO(P04))
 732298-55-4, Iron lithium molybdenum oxide phosphate
 (Fe0.33Li2Mo0.67O(P04)) 732298-56-5, Germanium lithium molybdenum
 oxide (GeLi2MoO5) 732298-58-7 732298-59-8, Iron
 lithium tantalum fluoride phosphate (Fe0.5Li2Ta0.5F(P04))
 732298-60-1 732298-61-2 732298-62-3
 732298-63-4, Lithium titanium oxide sulfate (Li2TiO(SO4))
 732298-64-5, Lithium titanium vanadium oxide sulfate
 (Li2Ti0.5V0.5O(SO4)) 732298-65-6, Lithium niobium vanadium oxide
 sulfate (Li2Nb0.5V0.5O(SO4)) 732298-66-7, Lithium molybdenum

oxide phosphate (Li₂MoO_{1.5}(PO₄)) 732298-67-8, Lithium
 titanium oxide phosphate (Li₂TiO_{0.5}(PO₄)) 732298-68-9, Lithium
 tungsten oxide silicate (Li₂WO(SiO₄))
 (pos. electrode of nonaq. electrolyte lithium ion secondary
 battery)

L25 ANSWER 9 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2004:546642 HCAPLUS Full-text
 DOCUMENT NUMBER: 141:91814
 TITLE: Method of preparation of battery electrode active
 material
 INVENTOR(S): Adamson, George; Barker, Jeremy; Ceder, Gerbrand;
 Dong, Ming; Morgan, Dane; Saidi, Yazid M.
 PATENT ASSIGNEE(S): Valence Technology, Inc., USA
 SOURCE: PCT Int. Appl., '71 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004057691	A1	20040708	WO 2003-US40930	20031219
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2455540	A1	20040619	CA 2003-2455540	20031219
US 20040131939	A1	20040708	US 2003-741257	20031219
AU 2003297466	A1	20040714	AU 2003-297466	20031219
EP 1500154	A1	20050126	EP 2003-793455	20031219
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK CN 1692510 A 20051102 CN 2003-80100192 20031219				
JP 2006511038	T	20060330	JP 2004-544174	20031219
US 20060083990	A1	20060420	US 2005-291298	20051201
PRIORITY APPLN. INFO.:				
			US 2002-435144P	P 20021219
			US 2003-741257	A3 20031219
			WO 2003-US40930	W 20031219

ED Entered STN: 08 Jul 2004

AB The invention provides an electrochem. cell which includes a first electrode and a second electrode which is a counter electrode to the first electrode, and an electrolyte material interposed there between. The first electrode includes an alkali metal phosphorous compound doped with an element having a valence state greater than that of the alkali metal.

IT 714248-93-6P, Lithium vanadium phosphate (Li2.99V2(PO4)3)

714248-95-8P, Lithium vanadium phosphate (Li2.98V2(PO4)3)

(Nb-doped; method of preparation of battery electrode active material)

RN 714248-83-6 HCAPLUS

CN Lithium vanadium phosphate (Li2.99V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Li	2.99	7439-93-2

RN 714248-85-8 HCAPLUS

CN Lithium vanadium phosphate (Li2.98V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Li	2.98	7439-93-2

(Zr-doped; method of prepn. of battery electrode active material)

IT 714248-79-0P, Lithium vanadium zirconium phosphate

(Li2.96V2Zr0.01(PO4)3) 714248-80-3P, Lithium vanadium

zirconium phosphate (Li2.9V2Zr0.02(PO4)3) 714248-81-4F,

Lithium vanadium zirconium phosphate (Li2.8V2Zr0.05(PO4)3)

714248-86-9P, Lithium niobium vanadium phosphate

(Li2.97Nb0.01V2(PO4)3) 714248-87-0P, Lithium niobium

vanadium phosphate (Li2.96Nb0.01V2(PO4)3) 714248-88-1P,

Lithium niobium vanadium phosphate (Li2.95Nb0.01V2(PO4)3)

714248-90-5P, Lithium magnesium vanadium phosphate

(Li2.98Mg0.01V2(PO4)3) 714248-91-6P, Lithium magnesium

vanadium phosphate (Li2.94Mg0.03V2(PO4)3) 714248-93-8P,

Lithium magnesium vanadium phosphate (Li2.9Mg0.05V2(PO4)3)

714248-95-0P, Lithium magnesium vanadium phosphate

(Li2.8Mg0.1V2(PO4)3)

(method of preparation of battery electrode active material)

RN 714248-79-0 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li2.96V2Zr0.01(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.01	7440-67-7
V	2	7440-62-2
Li	2.96	7439-93-2

RN 714248-80-3 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li2.9V2Zr0.02(PO4)3) (CA INDEX NAME)

10/551,935

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.02	7440-67-7
V	2	7440-62-2
Li	2.9	7439-93-2

RN 714248-81-4 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li2.8V2Zr0.05(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.05	7440-67-7
V	2	7440-62-2
Li	2.8	7439-93-2

RN 714248-86-9 HCAPLUS

CN Lithium niobium vanadium phosphate (Li2.97Nb0.01V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Nb	0.01	7440-03-1
Li	2.97	7439-93-2

RN 714248-87-0 HCAPLUS

CN Lithium niobium vanadium phosphate (Li2.96Nb0.01V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Nb	0.01	7440-03-1
Li	2.96	7439-93-2

RN 714248-88-1 HCAPLUS

CN Lithium niobium vanadium phosphate (Li2.95Nb0.01V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Nb	0.01	7440-03-1
Li	2.95	7439-93-2

RN 714248-90-5 HCAPLUS

CN Lithium magnesium vanadium phosphate (Li2.98Mg0.01V2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Mg	0.01	7439-95-4
Li	2.98	7439-93-2

RN 714248-91-6 HCAPLUS

CN Lithium magnesium vanadium phosphate (Li₂.94Mg0.03V₂(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Mg	0.03	7439-95-4
Li	2.94	7439-93-2

RN 714248-93-8 HCAPLUS

CN Lithium magnesium vanadium phosphate (Li₂.9Mg0.05V₂(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Mg	0.05	7439-95-4
Li	2.9	7439-93-2

RN 714248-95-0 HCAPLUS

CN Lithium magnesium vanadium phosphate (Li₂.8Mg0.1V₂(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	2	7440-62-2
Mg	0.1	7439-95-4
Li	2.8	7439-93-2

IC ICM H01M004-48

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

- IT 714248-83-6P, Lithium vanadium phosphate (Li₂.99V₂(PO₄)₃)
 714248-85-8P, Lithium vanadium phosphate (Li₂.98V₂(PO₄)₃)
 714249-02-2P, Cobalt lithium phosphate (CoLi_{0.99}(PO₄)) 714249-20-4P, Iron lithium phosphate (FeLi_{0.99}(PO₄))
 (Nb-doped; method of preparation of battery electrode active material)
- IT 714248-75-6P, Lithium manganese phosphate (Li_{0.98}Mn(PO₄))
 714248-85-8P, Lithium vanadium phosphate (Li₂.98V₂(PO₄)₃)
 714248-97-2P, Cobalt lithium phosphate (CoLi_{0.98}(PO₄)) 714249-17-9P, Iron lithium phosphate (FeLi_{0.98}(PO₄))
 (Zr-doped; method of preparation of battery electrode active material)
- IT 15365-14-7P, Iron lithium phosphate FeLi(PO₄) 554453-37-1P, Iron lithium zirconium phosphate 554453-39-3P, Iron lithium niobium phosphate 554453-42-8P, Iron lithium magnesium phosphate

714248-65-4P 714248-66-5P, Lithium manganese phosphate (Li_{0.99}Mn(P₀₄)) 714248-67-6P, Lithium manganese niobium phosphate (Li_{0.97}MnNb_{0.01}(P₀₄)) 714248-68-7P, Lithium manganese niobium phosphate (Li_{0.96}MnNb_{0.01}(P₀₄)) 714248-69-8P 714248-70-1P, Lithium magnesium manganese phosphate (Li_{0.98}Mg_{0.01}Mn(P₀₄)) 714248-71-2P, Lithium magnesium manganese phosphate (Li_{0.96}Mg_{0.02}Mn(P₀₄)) 714248-72-3P, Lithium magnesium manganese phosphate (Li_{0.94}Mg_{0.03}Mn(P₀₄)) 714248-73-4P, Lithium magnesium manganese phosphate (Li_{0.98}Mg_{0.05}Mn_{0.96}(P₀₄)) 714248-74-5P 714248-76-7P, Lithium manganese zirconium phosphate (Li_{0.96}MnZr_{0.01}(P₀₄)) 714248-77-8P 714248-79-8P, Lithium vanadium zirconium phosphate (Li_{2.96}V₂Zr_{0.01}(P₀₄)₃) 714248-80-3P, Lithium vanadium zirconium phosphate (Li_{2.9}V₂Zr_{0.02}(P₀₄)₃) 714248-81-4P, Lithium vanadium zirconium phosphate (Li_{2.8}V₂Zr_{0.05}(P₀₄)₃) 714248-82-5P 714248-86-9P, Lithium niobium vanadium phosphate (Li_{2.9}Nb_{0.01}V₂(P₀₄)₃) 714248-87-0P, Lithium niobium vanadium phosphate (Li_{2.96}Nb_{0.01}V₂(P₀₄)₃) 714248-88-1P, Lithium niobium vanadium phosphate (Li_{2.95}Nb_{0.01}V₂(P₀₄)₃) 714248-89-2P 714248-90-5P, Lithium magnesium vanadium phosphate (Li_{2.98}Mg_{0.01}V₂(P₀₄)₃) 714248-91-6P, Lithium magnesium vanadium phosphate (Li_{2.94}Mg_{0.03}V₂(P₀₄)₃) 714248-93-8P, Lithium magnesium vanadium phosphate (Li_{2.9}Mg_{0.05}V₂(P₀₄)₃) 714248-95-0P, Lithium magnesium vanadium phosphate (Li_{2.8}Mg_{0.1}V₂(P₀₄)₃) 714248-96-1P 714248-99-4P, Cobalt lithium zirconium phosphate (CoLi_{0.96}Zr_{0.01}(P₀₄)) 714249-00-0P 714249-04-4P, Cobalt lithium niobium phosphate (CoLi_{0.97}Nb_{0.01}(P₀₄)) 714249-07-7P, Cobalt lithium niobium phosphate (CoLi_{0.96}Nb_{0.01}(P₀₄)) 714249-08-8P 714249-10-2P, Cobalt lithium magnesium phosphate (CoLi_{0.98}Mg_{0.01}(P₀₄)) 714249-11-3P, Cobalt lithium magnesium phosphate (CoLi_{0.96}Mg_{0.02}(P₀₄)) 714249-13-5P, Cobalt lithium magnesium phosphate (CoLi_{0.94}Mg_{0.03}(P₀₄)) 714249-15-7P, Cobalt lithium magnesium phosphate (Co_{0.86}Li_{0.98}Mg_{0.05}(P₀₄)) 714249-19-1P, Iron lithium zirconium phosphate (FeLi_{0.96}Zr_{0.01}(P₀₄)) 714249-22-6P, Iron lithium niobium phosphate (FeLi_{0.97}Nb_{0.01}(P₀₄)) 714249-23-7P, Iron lithium niobium phosphate (FeLi_{0.96}Nb_{0.01}(P₀₄)) 714249-25-9P, Iron lithium magnesium phosphate (FeLi_{0.98}Mg_{0.01}(P₀₄)) 714249-27-1P, Iron lithium magnesium phosphate (Fe_{0.96}Li_{0.98}Mg_{0.04}(P₀₄)) 714249-28-2P, Iron lithium magnesium phosphate (Fe_{0.96}Li_{0.98}Mg_{0.05}(P₀₄))
(method of preparation of battery electrode active material)

L25 ANSWER 10 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2003:999003 HCAPLUS [Full-text](#)
 DOCUMENT NUMBER: 140:324022
 TITLE: Structure and battery properties of LiCoPO₄ and Li₂CoPO₄F
 AUTHOR(S): Okada, Shigeto; Ueno, Mizuki; Uebo, Yasushi; Yamaki, Jun-ichi
 CORPORATE SOURCE: Institute of Advanced Material Study, Kyushu University, Kasuga, 816-8580, Japan
 SOURCE: JAERI-Review (2003), 2003-019, Activity Report on the Utilization of Research Reactors, 322-323
 CODEN: JERVE9
 DOCUMENT TYPE: Report
 LANGUAGE: English
 ED Entered STN: 23 Dec 2003
 AB The structure of ordered phospho-olivine LiCoPO₄ and fluoride phosphate Li₂CoPO₄F were investigated by neutron diffraction, and the cathode properties were compared using coin-type cells in a nonaq. electrolyte. Interat.

distances, ionic radii, and crystallog. data of the 2 compds. are given. The quasi open circuit voltage charge-discharge profiles showed that Li₂CoPO₄F is a new 5-V class cathode like LiCoPO₄, and the open-circuit voltage is higher than that of LiCoPO₄.

IT 484039-84-1, Cobalt lithium fluoride phosphate (CoLi₂F(PO₄))
(structure and battery properties of LiCoPO₄ and Li₂CoPO₄F)
RN 484039-84-1 HCAPLUS
CN Cobalt lithium fluoride phosphate (CoLi₂F(PO₄)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	1	7440-48-4
Li	2	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 72, 75

IT 13824-63-0, Cobalt lithium phosphate (CoLiPO₄) 484039-84-1,
Cobalt lithium fluoride phosphate (CoLi₂F(PO₄))

(structure and battery properties of LiCoPO₄ and Li₂CoPO₄F)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L25 ANSWER 11 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:796193 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 139:310049

TITLE: Batteries comprising alkali-transition metal phosphates and preferred electrolytes

INVENTOR(S): Pugh, James; Saidi, Mohammed Y.; Huang, Haitao

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 24 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030190527	A1	20031009	US 2002-116276	20020403
CA 2479790	A1	20031016	CA 2003-2479790	20030327
WO 2003085757	A1	20031016	WO 2003-US9634	20030327

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

RR: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2003224801 A1 20031020 AU 2003-224801 20030327
 <--
 EP 1490917 A1 20041229 EP 2003-721492 20030327
 <--
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
 JP 2005522009 T 20050721 JP 2003-582838 20030327
 <--
 CN 1650450 A 20050803 CN 2003-810033 20030327
 <--
 US 20050181283 A1 20050818 US 2005-80605 20050315
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 PRIORITY APPLN. INFO.: US 2002-116276 A 20020403
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 WO 2003-US9634 W 20030327
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ED Entered STN: 10 Oct 2003

AB Lithium batteries comprising: (a) an electrode comprising a material AaMb(XY₄)cZd, wherein (i) A is an alkali metal and 0<a≤9; (ii) M comprises a transition metal, and 1≤b≤3; (iii) XY₄ is X'O₄-x Y'x, X'O₄-yY'₂y, X''S₄, or mixts. thereof, where X' is P, As, Sb, Si, Ge, V, S, or mixts. thereof; X'' is P, As, Sb, Si, Ge, V, or mixts. thereof; Y' is halogen, S, N, or mixts. thereof; 0≤x<3; and 0<y≤2; and 0<c≤3; and (iv) Z is OH, halogen, or mixts. thereof, and 0≤d≤6; and (b) a counter-electrode; and (c) an electrolyte comprising an alkyl and/or alkylene carbonate and a cyclic ester. Preferably, M addnl. comprises at least one non-transition metal. Preferred embodiments include those having an olivine structure, where c = 1, and those having a NASICON structure, where c = 3.

IT 484040-22-4F, Lithium vanadium fluoride phosphate (Li₆V₂F(PO₄)₃) 484040-28-0F

(batteries comprising alkali-transition metal phosphates and preferred electrolytes)

RN 484040-22-4 HCAPLUS

CN Lithium vanadium fluoride phosphate (Li₆V₂F(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	6	7439-93-2

RN 484040-28-0 HCAPLUS

CN Aluminum cobalt lithium magnesium fluoride phosphate (Al_{0.02}Co_{0.9}Li_{2.0}Mg_{0.05}F(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	0.9	7440-48-4
Mg	0.05	7439-95-4
Li	2.02	7439-93-2
Al	0.02	7429-90-5

IC ICM H01M004-58

INCL 429231900; 429231950; 429221000; 429223000; 429231500; 429224000;

429231600
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 49
 IT 477779-87-6P, Sodium vanadium fluoride phosphate NaVF(PO4)
 484040-01-9P, Iron lithium magnesium fluoride phosphate
 Fe0.9Li1.25Mg0.1F0.25(PO4) 484040-22-4P, Lithium vanadium
 fluoride phosphate (Li6V2F(PO4)3) 484040-28-0P
 610272-07-6P 610311-01-8P
 (batteries comprising alkali-transition metal phosphates and preferred electrolytes)

L25 ANSWER 12 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2003:628392 HCAPLUS Full-text
 DOCUMENT NUMBER: 139:166947
 TITLE: Cathode active mass, cathode, secondary
 nonaqueous-electrolyte battery, and method for its
 charging and discharging
 INVENTOR(S): Okada, Shigeto; Yamaki, Junichi; Kamibo, Yasushi;
 Ueno, Mizuki
 PATENT ASSIGNEE(S): Sangaku Renkei Kiko Kyushu Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003229126	A	20030815	JP 2002-24976	20020201
JP 3624205	B2	20050302	<--	
PRIORITY APPLN. INFO.:			JP 2002-24976	20020201
			<--	

ED Entered STN: 15 Aug 2003

AB The title cathode active mass contains a lithium phosphate fluoride compound Li2-XMPO4F (M is a transition metal; X = 0-2). The title battery, equipped with a cathode containing the above active mass, is charged and discharged by using III/II and IV/III valence oxidation-reduction reaction of the transition metal. The battery provides high discharge voltage and energy d.

IT 484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4))
 (cathode containing lithium transition metal phosphate fluoride for nonaq. battery)

RN 484039-84-1 HCAPLUS

CN Cobalt lithium fluoride phosphate (CoLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	1	7440-48-4
Li	2	7439-93-2

IC ICM H01M004-58

ICS H01M004-02; H01M004-38; H01M004-46; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4))

(cathode containing lithium transition metal phosphate fluoride for nonaq. battery)

L25 ANSWER 13 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:437518 HCAPLUS Full-text

DOCUMENT NUMBER: 139:278965

TITLE: Experimental and computational study of the structure and electrochemical properties of monoclinic $\text{Li}_2\text{M}_2(\text{PO}_4)_3$ compounds

AUTHOR(S): Morgan, D.; Ceder, G.; Saidi, M. Y.; Barker, J.; Swayer, J.; Huang, H.; Adamson, G.

CORPORATE SOURCE: Computational Modeling Consultants, Wellesley, MA, USA

SOURCE: Journal of Power Sources (2003), 119-121, 755-759

CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 09 Jun 2003

AB This paper presents a combined computational and exptl. study of the structural and electrochem. properties of monoclinic $\text{Li}_2\text{M}_2(\text{PO}_4)_3$ (with a focus on $\text{M}=\text{V}$). The voltage curve for $x=0-3$ Li is measured exptl. and calculated. Features of the voltage curve are understood as emerging from site energetics, Li ordering, and redox couples. These features are found to be largely independent of alloying and a simple additive model is proposed to analyze the voltage curve for different cation substitutions. The model is shown to be very useful for understanding exptl. results for a number of substituted compds.

IT 204653-31-6, Lithium titanium vanadium phosphate $\text{Li}_2\text{TiV}(\text{PO}_4)_3$
204653-32-7, Aluminum lithium vanadium phosphate $\text{AlLi}_3\text{V}(\text{PO}_4)_3$
(exptl. and computational study of crystal structure site occupancy and electrochem. properties of monoclinic $\text{Li}_2\text{M}_2(\text{PO}_4)_3$ compds. as battery cathodes)

RN 204653-31-6 HCAPLUS

CN Lithium titanium vanadium phosphate ($\text{Li}_2\text{TiV}(\text{PO}_4)_3$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Ti	1	7440-32-6
Li	3	7439-93-2

RN 204653-32-7 HCAPLUS

CN Aluminum lithium vanadium phosphate ($\text{AlLi}_3\text{V}(\text{PO}_4)_3$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Al	1	7429-90-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 72

IT 204653-31-6, Lithium titanium vanadium phosphate $\text{Li}_2\text{TiV}(\text{PO}_4)_3$

204653-32-7, Aluminum lithium vanadium phosphate $\text{AlLi}_3\text{V}(\text{PO}_4)_3$
 605661-90-3, Lithium vanadium phosphate ($\text{Li}_0.25\text{V}_2(\text{PO}_4)_3$)
 605661-91-4, Iron lithium phosphate ($\text{Fe}_2\text{Li}_0.25(\text{PO}_4)_3$) 605661-92-5
 605661-93-6

(exptl. and computational study of crystal structure site occupancy and electrochem. properties of monoclinic $\text{Li}_x\text{M}_2(\text{PO}_4)_3$ compds. as battery cathodes)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 14 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2003:389054 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 139:278891

TITLE: New iron (III) hydroxyl-phosphate with rod-packing structure as intercalation materials

AUTHOR(S): Song, Yanning; Zavalij, Peter Y.; Whittingham, M. Stanley

CORPORATE SOURCE: Department of Chemistry and Institute for Materials Research, State University of New York at Binghamton, Binghamton, NY, 13902-6016, USA

SOURCE: Materials Research Society Symposium Proceedings (2003), 756(Solid State Ionics--2002), 249-253

CODEN: MRSPDH; ISSN: 0272-9172

PUBLISHER: Materials Research Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 21 May 2003

AB A new Fe hydroxyl-phosphate, $\text{H}_2\text{Fe}_{14}/3(\text{PO}_4)_4(\text{OH})_4$ was synthesized under hydrothermal conditions. In this compound, perpendicular chains formed by the face-sharing FeO_6 form rod-packing structures. Only .apprx.60% of the chain sites are occupied by Fe atoms, other metals such as Mn, Ni, and Zn, can be incorporated into the chain either by filling in the vacancies and/or replacing some of the Fe atoms. Reversible insertion and extraction of Li into this compound shows it to be an excellent cathode material. At c.d. of 0.1 mA/cm², 90% of the theor. capacity of 176 mA-h/g can be obtained. The capacity was reduced to .apprx.70% for a 10-fold increase of c.d. The electrochem. behavior is attributed to the 3-dimensional rod packing structure where Li can move freely even at high current densities inside the 3-dimensional framework without altering the host structure. Two of the protons in the lattice may be exchanged by Li yielding $\text{Li}_2\text{Fe}_{14}/3(\text{PO}_4)_4(\text{OH})_4$. These Li atoms are not removable in electrochem. cycling and similar electrochem. properties were found for these 2 compds., suggesting an ion-exchange process for the lithiation.

IT 605685-55-0P, Iron lithium hydroxide phosphate

($\text{Fe}_7\text{Li}_3(\text{OH})_6(\text{PO}_4)_6$)

(iron(III) hydroxyl-phosphates with rod-packing structures as cathodes for lithium batteries)

RN 605685-55-0 HCAPLUS

CN Iron lithium hydroxide phosphate ($\text{Fe}_7\text{Li}_3(\text{OH})_6(\text{PO}_4)_6$) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
HO	6	14280-30-9
O4P	6	14265-44-2
Li	3	7439-93-2
Fe	7	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 78
 IT 605685-54-9P, Iron hydroxide phosphate (Fe⁷(OH)₆(HPO₄)₃(PO₄)₃)
 605685-55-8P, Iron lithium hydroxide phosphate (Fe⁷Li₃(OH)₆(PO₄)₆)
 (iron(III) hydroxyl-phosphates with rod-packing structures as cathodes for lithium batteries)
 REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT
 L25 ANSWER 15 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2003:97868 HCAPLUS Full-text
 DOCUMENT NUMBER: 138:140078
 TITLE: Alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials
 INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffrey L.
 PATENT ASSIGNEE(S): Valence Technology Inc., UK
 SOURCE: U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U.S. 6,387,568.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030027049	A1	20030206	US 2001-14822	20011026
			<--	
US 6777132	B2	20040817		
US 6387568	B1	20020514	US 2000-559861	20000427
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AT 317157	T	20060215	AT 2001-916649	20010314
			<--	
TW 503596	B	20020921	TW 2001-90109979	20010426
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US 20030013019	A1	20030116	US 2001-45685	20011107
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US 6964827	B2	20051115		
US 20020168573	A1	20021114	US 2002-133091	20020426
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US 6855462	B2	20050215		
CA 2463872	A1	20030508	CA 2002-2463872	20021018
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WO 2003038930	A2	20030508	WO 2002-US33510	20021018
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WO 2003038930	A3	20040422		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR,				

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AU 2002337911	A1	20030512 AU 2002-337911 20021018
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EP 1444744	A2	20040811 EP 2002-773814 20021018
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CN 1659728	A	20050824 CN 2002-821019 20021018
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JP 2006516172	T	20060622 JP 2003-541083 20021018
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US 20040265695	A1	20041230 US 2004-870135 20040616
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US 7214448	B2	20070508
US 20060014078	A1	20060119 US 2005-223082 20050909
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US 7270915	B2	20070918
US 20070009800	A1	20070111 US 2006-531824 20060914
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US 20070190425	A1	20070816 US 2007-734678 20070412
		<--
PRIORITY APPLN. INFO.:		US 2000-559861 A2 20000427
		<--
		US 2001-14822 A2 20011026
		<--
		US 2001-45685 A3 20011107
		<--
		WO 2002-US33510 W 20021018
		<--
		US 2004-870135 A2 20040616

ED Entered STN: 07 Feb 2003

AB An electroactive material comprises: AaMb(XY4)cZd, wherein (a) A is selected from the group consisting of Li, Na, and/or K, and a = 0-8; (b) M is ≥ 1 metal, comprising ≥ 1 metal which is capable of undergoing oxidation to a higher valence state, and b = 1-3; (c) XY4 is selected from the group consisting of X'O4-xY'x, X'O4-yY'2y, X''S4, and mixts. thereof, where X' is P, As, Sb, Si, and/or Ge; X'' is P, As, Sb, Si, and/or Ge; Y' is halogen, x = 0-3; and y = 0-4; and c = 0-3; (d) Z is OH and/or halogen, d = 0-6; and wherein M, X, Y, Z, a, b, c, d, x, and y are selected so as to maintain the electroneutrality of the compound Preferred embodiments include those having where c=1, those where c=2, and those where c=3. Preferred embodiments include those where a ≤ 1 and c=1, those where a=2 and c=1, and those where a ≥ 3 and c=3. This invention also provides electrodes comprising an electrode active material of this invention, and batteries that comprise a first electrode having an electrode active material of this invention; a second electrode having a compatible active material; and an electrolyte.

IT 484039-84-1P, Cobalt lithium fluoride phosphate (CoLi2F(PO4))
 484039-86-3P, Iron lithium fluoride phosphate (FeLi2F(PO4))
 484039-88-5P 484039-91-0P, Lithium nickel fluoride
 phosphate (Li2NiF(PO4)) 484039-95-4P, Lithium manganese
 fluoride phosphate (Li2MnF(PO4)) 484039-97-6P, Copper
 lithium fluoride phosphate (CuLi2F(PO4)) 484040-14-4P, Iron
 lithium fluoride phosphate (Fe2Li4F(PO4)3) 484040-15-5P,
 Lithium vanadium fluoride phosphate (Li4V2F(PO4)3)
 484040-20-2P, Lithium manganese fluoride phosphate
 (Li5Mn2F2(PO4)3) 484040-22-4P, Lithium vanadium fluoride
 phosphate (Li6V2F(PO4)3) 484040-27-9P 484040-28-0P
 (alkali/transition metal halo- and hydroxy-phosphates and related

electrode active materials)

RN 484039-84-1 HCAPLUS

CN Cobalt lithium fluoride phosphate (CoLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	1	7440-48-4
Li	2	7439-93-2

RN 484039-86-3 HCAPLUS

CN Iron lithium fluoride phosphate (FeLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

RN 484039-88-5 HCAPLUS

CN Iron lithium magnesium fluoride phosphate (Fe0.9Li2Mg0.1F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mg	0.1	7439-95-4
Li	2	7439-93-2
Fe	0.9	7439-89-6

RN 484039-91-0 HCAPLUS

CN Lithium nickel fluoride phosphate (Li2NiF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Ni	1	7440-02-0
Li	2	7439-93-2

RN 484039-95-4 HCAPLUS

CN Lithium manganese fluoride phosphate (Li2MnF(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2

RN 484039-97-6 HCAPLUS

CN Copper lithium fluoride phosphate (CuLi2F(PO4)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Cu	1	7440-50-8
Li	2	7439-93-2

RN 484040-14-4 HCAPLUS

CN Iron lithium fluoride phosphate (Fe2Li4F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
Li	4	7439-93-2
Fe	2	7439-89-6

RN 484040-15-5 HCAPLUS

CN Lithium vanadium fluoride phosphate (Li4V2F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	4	7439-93-2

RN 484040-20-2 HCAPLUS

CN Lithium manganese fluoride phosphate (Li5Mn2F2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	2	14762-94-8
O4P	3	14265-44-2
Mn	2	7439-96-5
Li	5	7439-93-2

RN 484040-22-4 HCAPLUS

CN Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	6	7439-93-2

RN 484040-27-9 HCAPLUS

CN Aluminum antimony lithium vanadium fluoride oxide phosphate
(AlSb0.5Li4VFO2(PO4)0.25) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O		2		17778-80-2
F		1		14762-94-8
O4P		0.25		14265-44-2
V		1		7440-62-2
Sb		0.5		7440-36-0
Li		4		7439-93-2
Al		1		7429-90-5

RN 484040-28-0 HCAPLUS

CN Aluminum cobalt lithium magnesium fluoride phosphate
(Al0.02Co0.9Li2.02Mg0.05F(PO4)) (CA INDEX NAME)

Component		Ratio		Component Registry Number
=====		=====		=====
F		1		14762-94-8
O4P		1		14265-44-2
Co		0.9		7440-48-4
Mg		0.05		7439-95-4
Li		2.02		7439-93-2
Al		0.02		7429-90-5

IC ICM H01M004-58

ICS C01B017-98; C01B025-10; C01B033-08

INCL 429231950; 429231900; 429221000; 429223000; 429224000; 429220000;
429231500; 429222000; 423332000; 423341000CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 49

IT 52934-02-8P, Cobalt lithium fluoride phosphate 52934-08-4P, Lithium
nickel fluoride phosphate 257892-19-6P, Sodium vanadium fluoride
phosphate (Na3V2F3(PO4)2) 477779-87-6P, Sodium vanadium fluoride
phosphate NaVFPO4 477779-89-8P, Lithium sodium vanadiumfluoride
phosphate (Li0.95Na0.05VF(PO4)) 484039-84-1P, Cobalt lithium
fluoride phosphate (CoLi2F(PO4)) 484039-86-3P, Iron lithium
fluoride phosphate (FeLi2F(PO4)) 484039-88-5P
484039-91-6P, Lithium nickel fluoride phosphate (Li2NiF(PO4))
484039-93-2P, Iron lithium fluoride phosphate 484039-95-4P,
Lithium manganese fluoride phosphate (Li2MnF(PO4))
484039-97-6P, Copper lithium fluoride phosphate (CuLi2F(PO4))
484040-01-9P, Iron lithium magnesium fluoride phosphate
(Fe0.9Li1.25Mg0.1F0.25(PO4)) 484040-04-2P, Sodium vanadium fluoride
phosphate (Na1.2VF1.2(PO4)) 484040-06-4P, Chromium sodium fluoride
phosphate 484040-08-6P, Manganese sodium fluoride phosphate
(MnNaF(PO4)) 484040-10-0P, Cobalt sodium fluoride phosphate
(CoNaF(PO4)) 484040-12-2P, Lithium sodium vanadiumfluoride phosphate
(Li0.1Na0.9VF(PO4)) 484040-13-3P, Sodium vanadium hydroxide
phosphate NaVOHPO4 484040-14-4P, Iron lithium fluoride
phosphate (Fe2Li4F(PO4)3) 484040-15-5P, Lithium vanadium
fluoride phosphate (Li4V2F(PO4)3) 484040-20-2P, Lithium
manganese fluoride phosphate (Li5Mn2F2(PO4)3) 484040-22-4P,
Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) 484040-25-7P,
Chromium lithium sodium fluoride phosphate silicate
(CrLiNa0.2F(PO4)0.8(SiO4)0.2) 484040-27-9P
484040-28-6P 493025-03-9P, Lithium manganese fluoride
phosphate 493025-04-0P, Copper lithium fluoride phosphate
(alkali/transition metal halo- and hydroxy-phosphates and related
electrode active materials)

REFERENCE COUNT: 134 THERE ARE 134 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L25 ANSWER 16 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2003:42884 HCAPLUS Full-text
 DOCUMENT NUMBER: 138:92874
 TITLE: Alkali/transition metal halo- and
 hydroxy-phosphates and related electrode active
 materials
 INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid; Swoyer, Jeffery
 L.
 PATENT ASSIGNEE(S): Valence Technology, Inc., USA
 SOURCE: U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U.
 S. 6,387,568.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 4
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20030013019	A1	20030116	US 2001-45685	20011107
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US 6964827	B2	20051115		
US 6387568	B1	20020514	US 2000-559861	20000427
			<--	
US 20030027049	A1	20030206	US 2001-14822	20011026
			<--	
US 6777132	B2	20040817		
US 20050142056	A1	20050630	US 2005-905649	20050114
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US 7261977	B2	20070828		
US 20060014078	A1	20060119	US 2005-223082	20050909
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US 7270915	B2	20070918		
PRIORITY APPLN. INFO.:			US 2000-559861	A2 20000427
			<--	
			US 2001-14822	A2 20011026
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			US 2001-45685	A1 20011107
			<--	
			US 2002-133091	A1 20020426
			<--	

ED Entered STN: 17 Jan 2003

AB Electrode active materials comprise lithium or other alkali metals, a transition metal, a phosphate or similar moiety, and a halogen or hydroxyl moiety. Such electrode actives include those of the formula: Aamb(XY₄)cZd wherein (a) A is selected from the group consisting of Li, Na, K, and mixts. thereof, and 0<a≤6; (b) M comprises one or more metals, comprising at least one metal which is capable of undergoing oxidation to a higher valence state, and 1≤b≤3; (c) XY₄ is selected from the group consisting of X'O₄-xY'X_x, X'O₄-yY'₂y, X'S₄, and mixts. thereof, where X' is P, As, Sb, Si, Ge, S, and mixts. thereof; X'' is P, As, Sb, Si, Ge and mixts. thereof; Y' is halogen; 0≤x<3; and 0<y<4; and 0<c≤3; (d) Z is OH, halogen, or mixts. thereof, and 0<d≤6; and wherein M, X, Y, Z, a, b, c, d, x and y are selected so as to maintain electroneutrality of the compound. In a preferred embodiment, M comprises two or more transition metals from Groups 4 to 11 of the Periodic Table. In another preferred embodiment, M comprises M'₁-mM''_m, where M' is at least one transition metal from Groups 4 to 11 of the Periodic Table; M'' is

at least one element from Groups 2, 3, 12, 13, or 14 of the Periodic Table, and $0 < m < 1$. Preferred embodiments include those having where $c=1$, those where $c=2$, and those where $c=3$. Preferred embodiments include those where $a \leq 1$ and $c=1$, those where $a=2$ and $c=1$, and those where $a \geq 3$ and $c=3$. This invention also provides electrodes comprising an electrode active material of this invention, and batteries that comprise a first electrode having an electrode active material of this invention; a second electrode having a compatible active material; and an electrolyte.

IT 484039-84-1, Cobalt lithium fluoride phosphate ($\text{CoLi}_2\text{F}(\text{PO}_4)$)
 484039-86-3, Iron lithium fluoride phosphate ($\text{FeLi}_2\text{F}(\text{PO}_4)$)
 484039-88-5

(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

RN 484039-84-1 HCAPLUS

CN Cobalt lithium fluoride phosphate ($\text{CoLi}_2\text{F}(\text{PO}_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Co	1	7440-48-4
Li	2	7439-93-2

RN 484039-86-3 HCAPLUS

CN Iron lithium fluoride phosphate ($\text{FeLi}_2\text{F}(\text{PO}_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Li	2	7439-93-2
Fe	1	7439-89-6

RN 484039-88-5 HCAPLUS

CN Iron lithium magnesium fluoride phosphate ($\text{Fe}_{0.9}\text{Li}_2\text{Mg}_{0.1}\text{F}(\text{PO}_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mg	0.1	7439-95-4
Li	2	7439-93-2
Fe	0.9	7439-89-6

IT 484039-91-0P, Lithium nickel fluoride phosphate ($\text{Li}_2\text{NiF}(\text{PO}_4)$)

484039-95-4P, Lithium manganese fluoride phosphate ($\text{Li}_2\text{MnF}(\text{PO}_4)$) 484039-97-6P, Copper lithium fluoride phosphate ($\text{CuLi}_2\text{F}(\text{PO}_4)$) 484040-14-4P, Iron lithium fluoride phosphate ($\text{Fe}_2\text{Li}_4\text{F}(\text{PO}_4)_3$) 484040-15-5P, Lithium vanadium fluoride phosphate ($\text{Li}_4\text{V}_2\text{F}(\text{PO}_4)_3$) 484040-20-2P, Lithium manganese fluoride phosphate ($\text{Li}_5\text{Mn}_2\text{F}_2(\text{PO}_4)_3$) 484040-22-4P, Lithium vanadium fluoride phosphate ($\text{Li}_6\text{V}_2\text{F}(\text{PO}_4)_3$) 484040-27-3P 484040-28-0P

(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

RN 484039-91-0 HCAPLUS

CN Lithium nickel fluoride phosphate (Li₂NiF(PO₄)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Ni	1	7440-02-0
Li	2	7439-93-2

RN 484039-95-4 HCAPLUS

CN Lithium manganese fluoride phosphate (Li₂MnF(PO₄)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2

RN 484039-97-6 HCAPLUS

CN Copper lithium fluoride phosphate (CuLi₂F(PO₄)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	1	14265-44-2
Cu	1	7440-50-8
Li	2	7439-93-2

RN 484040-14-4 HCAPLUS

CN Iron lithium fluoride phosphate (Fe₂Li₄F(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
Li	4	7439-93-2
Fe	2	7439-89-6

RN 484040-15-5 HCAPLUS

CN Lithium vanadium fluoride phosphate (Li₄V₂F(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
F	1	14762-94-8
O4P	3	14265-44-2
V	2	7440-62-2
Li	4	7439-93-2

RN 484040-20-2 HCAPLUS

CN Lithium manganese fluoride phosphate (Li₅Mn₂F₂(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number

F		2		14762-94-8
O4P		3		14265-44-2
Mn		2		7439-96-5
Li		5		7439-93-2

RN 484040-22-4 HCAPLUS

CN Lithium vanadium fluoride phosphate (Li6V2F(PO4)3) (CA INDEX NAME)

Component		Ratio		Component Registry Number
-----	+	-----	+	-----
F		1		14762-94-8
O4P		3		14265-44-2
V		2		7440-62-2
Li		6		7439-93-2

RN 484040-27-9 HCAPLUS

CN Aluminum antimony lithium vanadium fluoride oxide phosphate
(AlSb0.5Li4VFO2(PO4)0.25) (CA INDEX NAME)

Component		Ratio		Component Registry Number
-----	+	-----	+	-----
O		2		17778-80-2
F		1		14762-94-8
O4P		0.25		14265-44-2
V		1		7440-62-2
Sb		0.5		7440-36-0
Li		4		7439-93-2
Al		1		7429-90-5

RN 484040-28-0 HCAPLUS

CN Aluminum cobalt lithium magnesium fluoride phosphate
(Al0.02Co0.9Li2.02Mg0.05F(PO4)) (CA INDEX NAME)

Component		Ratio		Component Registry Number
-----	+	-----	+	-----
F		1		14762-94-8
O4P		1		14265-44-2
Co		0.9		7440-48-4
Mg		0.05		7439-95-4
Li		2.02		7439-93-2
Al		0.02		7429-90-5

IC ICM H01M004-58

ICS C01B025-45; C01B025-30

INCL 429231900; X42-923.195; X42-922.1; X42-922.3; X42-922.0; X42-922.4;
X42-923.15; X42-923.16; X42-330.6CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses

484039-84-1, Cobalt lithium fluoride phosphate (CoLi2F(PO4))

484039-85-3, Iron lithium fluoride phosphate (FeLi2F(PO4))

484039-89-5

(alkali/transition metal halo- and hydroxy-phosphates and related
electrode active materials)IT 52934-02-8P, Cobalt lithium fluoride phosphate 477779-87-6P, Sodium
vanadium fluoride phosphate NaVFP04 484039-91-8P, Lithium
nickel fluoride phosphate (Li2NiF(PO4)) 484039-93-2P, Iron lithium

fluoride phosphate 484039-95-4P, Lithium manganese fluoride phosphate (Li₂MnF(PO₄)) 484039-97-6P, Copper lithium fluoride phosphate (CuLi₂F(PO₄)) 484040-01-9P 484040-04-2P, Sodium vanadium fluoride phosphate (Na₂VF_{1.2}(PO₄)) 484040-06-4P, Chromium sodium fluoride phosphate 484040-08-6P, Manganese sodium fluoride phosphate (MnNaF(PO₄)) 484040-10-0P, Cobalt sodium fluoride phosphate (CoNaF(PO₄)) 484040-12-2P 484040-13-3P, Sodium vanadium hydroxide phosphate (NaV(OH)(PO₄)) 484040-14-4P, Iron lithium fluoride phosphate (Fe₂Li₄F(PO₄)) 484040-15-5P, Lithium vanadium fluoride phosphate (Li₄V₂F(PO₄)) 484040-20-2P, Lithium manganese fluoride phosphate (Li₅Mn₂F₂(PO₄)) 484040-22-4P, Lithium vanadium fluoride phosphate (Li₆V₂F(PO₄)) 484040-25-7P 484040-27-9P 484040-28-0P

(alkali/transition metal halo- and hydroxy-phosphates and related electrode active materials)

REFERENCE COUNT: 127 THERE ARE 127 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 17 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:781946 HCAPLUS Full-text

DOCUMENT NUMBER: 138:290280

TITLE: X-Ray Absorption Study of Li_xMnyFe_{1-y}PO₄ (0 ≤ x ≤ 1, 0 < y ≤ 1)

AUTHOR(S): Li, Guohua; Kudo, Yoshihiro; Liu, Kuang-Yu; Azuma, Hideto; Tohda, Masayuki

CORPORATE SOURCE: Sony Corporation, Nishi Battery Laboratories, Kanagawa, 243-0021, Japan

SOURCE: Journal of the Electrochemical Society (2002), 149(11), A1414-A1418
CODEN: JESOCN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 14 Oct 2002

AB C-containing cathode materials Li_xMnyFe_{1-y}PO₄ (0 < y ≤ 1) were prepared by a solid-state reaction by adding C black to the synthetic precursors. The local structural change of electrochem. prepared Li_xMnyFe_{1-y}PO₄ (0 ≤ x ≤ 1, 0 < y ≤ 1) samples was studied by x-ray absorption spectroscopy. The local structural change of Mn is completely reversible during the charge-discharge processes. According to the anal. of K-edge x-ray absorption fine structure, no significant difference is observed in the local structure of Mn in the charged state for the whole range of Mn contents.

IT 213467-46-0, Iron lithium manganese phosphate (FeLi₂Mn(PO₄))
(x-ray absorption spectroscopy of iron lithium manganese phosphate cathodes for lithium batteries)

RN 213467-46-0 HCAPLUS

CN Iron lithium manganese phosphate (FeLi₂Mn(PO₄)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy

Technology)

Section cross-reference(s): 73

IT 13826-59-0, Lithium manganese phosphate (LiMnPO₄) 213467-46-0
 , Iron lithium manganese phosphate (FeLi₂Mn(PO₄)₂) 300858-61-1, Iron
 lithium manganese phosphate (Fe_{0.4}LiMn_{0.6}(PO₄)) 371145-95-8, Iron
 lithium manganese phosphate (Fe_{0.25}LiMn_{0.75}(PO₄)) 407629-83-8
 412351-36-1, Iron lithium manganese phosphate (Fe_{0.9}LiMn_{0.1}(PO₄))
 464174-82-1, Iron lithium manganese phosphate ((Fe,Mn)LiO-1(PO₄))
 464174-83-2, Iron lithium manganese phosphate (Fe_{0.6}LiMn_{0.4}(PO₄))
 474903-00-9, Iron lithium manganese phosphate (Fe_{0.3}LiMn_{0.7}(PO₄))
 474903-03-2, Iron lithium manganese phosphate (Fe_{0.1}LiMn_{0.9}(PO₄))
 474903-04-3, Iron lithium manganese phosphate (Fe_{0.75}LiMn_{0.25}(PO₄))
 (x-ray absorption spectroscopy of iron lithium manganese phosphate
 cathodes for lithium batteries)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L25 ANSWER 18 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:734259 HCAPLUS Full-text

DOCUMENT NUMBER: 137:265592

TITLE: secondary lithium battery

INVENTOR(S): Fujita, Shigeru; Akashi, Hiroyuki; Adachi, Momoe;
 Shibamoto, Goro

PATENT ASSIGNEE(S): Sony Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 2002279989	A	20020927	JP 2001-77086	20010316
			<--	
PRIORITY APPLN. INFO.:			JP 2001-77086	20010316
			<--	

ED Entered STN: 27 Sep 2002

AB The battery has a Li intercalating and depositing anode and a oxide cathode
 active mass containing Li, P and ≥ 1 of Fe, Mn and Co. The cathode may also
 contain a 2nd oxide active mass containing Li and ≥ 1 of Co, Ni, and Mn. The
 anode active mass is selected from Li intercalating carbonaceous materials and
 metals, semiconductors, alloys, and compds. capable of alloying with Li.

IT 213467-46-0, Iron lithium manganese phosphate [FeLi₂Mn(PO₄)₂]
 (comps. of oxide cathodes for secondary lithium batteries with
 lithium intercalating and depositing anodes)

RN 213467-40 HCAPLUS

CN Iron lithium manganese phosphate (FeLi₂Mn(PO₄)₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

IC ICM H01M004-58

ICS H01M004-02; H01M004-38; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt lithium oxide (CoLiO2) 15365-14-7, Iron lithium phosphate (FeLiPO4) 113066-89-0, Cobalt lithium nickel oxide (Co0.2LiNi0.8O2) 213467-46-0, Iron lithium manganese phosphate [FeLi2Mn(PO4)2] (compos. of oxide cathodes for secondary lithium batteries with lithium intercalating and depositing anodes)

L25 ANSWER 19 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:688501 HCAPLUS Full-text

DOCUMENT NUMBER: 137:203995

TITLE: Method of preparation and battery use of lithium based phosphates

INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: U.S., 25 pp., Cont.-in-part of U.S. 5,871,866.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6447951	B1	20020910	US 1998-195961	19981119
			<--	
CA 2351332	A1	20000602	CA 1999-2351332	19991005
			<--	
WO 2000031812	A1	20000602	WO 1999-US23074	19991005
			<--	
WO 2000031812	A9	20020822		
W:	AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
AU 9965076	A	20000613	AU 1999-65076	19991005
			<--	
AU 764529	B2	20030821		
EP 1135819	A1	20010926	EP 1999-953046	19991005
			<--	
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI			
JP 2002530835	T	20020917	JP 2000-584544	19991005
			<--	
MX 2001PA04931	A	20040129	MX 2001-PA4931	20010516
			<--	
PRIORITY APPLN. INFO.:			US 1996-717919	A2 19960923
			<--	
			US 1998-195961	A 19981119
			<--	
			WO 1999-US23074	W 19991005
			<--	

ED Entered STN: 11 Sep 2002

AB A lithium ion battery comprises: a first electrode having an active material in a first condition of the nominal general formula $\text{Li}_{3-x}\text{M}'\text{yM}''_{2-y}(\text{PO}_4)_3$, $x =$

0, $0 < y < 2$ and in a second condition of the nominal general formula: $\text{Li}_3\text{-xM'yM''}^{2-y}(\text{PO}_4)_3$, $0 < x \leq 3$, wherein M' is Zr or Ti and M'' is a metal selected from V, Cr, Mn, Fe, Co, Ni, Cu, Sn, Pb, Mo, W, Cd, Zn, and Pd, with the proviso that when M' is Ti, M'' is not Fe; a second electrode which is a counter-electrode to the first electrode; and an electrolyte between the electrodes.

IT 204653-32-7P, Aluminum lithium vanadium phosphate $\text{AlLi}_3\text{V}(\text{PO}_4)_3$
(method of preparation and battery use of lithium based phosphates)
RN 204653-32-7 HCAPLUS
CN Aluminum lithium vanadium phosphate ($\text{AlLi}_3\text{V}(\text{PO}_4)_3$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Al	1	7429-90-5

IC ICM H01M004-58

INCL 429218100

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 49

IT 84159-18-2P, Lithium vanadium phosphate $\text{Li}_3\text{V}_2(\text{PO}_4)_3$
204653-32-7P, Aluminum lithium vanadium phosphate $\text{AlLi}_3\text{V}(\text{PO}_4)_3$
270258-22-5P, Lithium manganese zirconium phosphate $\text{Li}_3\text{MnZr}(\text{PO}_4)_3$
(method of preparation and battery use of lithium based phosphates)

L25 ANSWER 20 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:558477 HCAPLUS Full-text

DOCUMENT NUMBER: 138:92665

TITLE: A neutron powder diffraction study of
electrochemically lithiated $\text{R-Li}_{3+x}\text{Fe}_2(\text{PO}_4)_3$ for $x = 1.8$

AUTHOR(S): Eyob, Paulos; Andersson, Anna S.; Thomas, John O.
CORPORATE SOURCE: Department of Materials Chemistry, Angstrom
Laboratory, Uppsala University, Uppsala, SE-751
21, Swed.

SOURCE: Journal of Materials Chemistry (2002),
12(8), 2343-2347

CODEN: JMACEP; ISSN: 0959-9428

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 29 Jul 2002

AB The electrochem. lithiated form of $\text{R-Li}_3\text{Fe}_2(\text{PO}_4)_3$, synthesized by ion exchange of fine powders of $\text{Na}_3\text{Fe}_2(\text{PO}_4)_3$ in a concentrated aqueous solution of LiNO_3 at a slightly elevated temperature (40°C), has been investigated by a combination of ex situ X-ray and neutron diffraction to probe particularly the lithium-ion distribution in the structure. $\text{Li}_{3+x}\text{Fe}_2(\text{PO}_4)_3$ samples were extracted from discharged electrochem. cells with a Li-metal anode; their structure was refined by the Rietveld method. Approx. 1.8 Li per formula unit can be inserted reversibly into the structure, corresponding to the reduction of almost all Fe^{3+} to Fe^{2+} . Ex situ X-ray powder diffraction shows the $\text{Fe}_2(\text{PO}_4)_3$ framework to remain intact during lithiation. The $\text{Li}(18f)$ site in $\text{R-Li}_3\text{Fe}_2(\text{PO}_4)_3$ (space group: $\text{R}\bar{3}(\text{cmb.macr})$) is totally vacated in $\text{R-Li}_{3+x}\text{Fe}_2(\text{PO}_4)_3$, $0 \leq x \leq 1.8$, with the lithium ions moving into two new general (18f) positions, Li(1) and Li(2), with 74(4)% and 86(4)% occupation, resp. This corresponds to the Li^+ ions moving cooperatively from pairs of layers

(alternate seps.: 2.2 and 5.4 Å) for x = 0 to equally spaced layers
(separation: 3.8 Å) for x = 1.8.

IT 483644-73-1, Iron lithium phosphate (Fe₂Li_{4.8}(PO₄)₃)
(neutron powder diffraction study of electrochem. lithiated
R-Li₃+xFe₂(PO₄)₃ for x = 1.8)
RN 483644-73-1 HCAPLUS
CN Iron lithium phosphate (Fe₂Li_{4.8}(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	4.8	7439-93-2
Fe	2	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

IT 483644-73-1, Iron lithium phosphate (Fe₂Li_{4.8}(PO₄)₃)
(neutron powder diffraction study of electrochem. lithiated
R-Li₃+xFe₂(PO₄)₃ for x = 1.8)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L25 ANSWER 21 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:505613 HCAPLUS Full-text

DOCUMENT NUMBER: 137:355365

TITLE: Optimized LiMnFe₂yPO₄ as the cathode for lithium
batteries

AUTHOR(S): Li, Guohua; Azuma, Hideto; Tohda, Masayuki
CORPORATE SOURCE: Nishi Battery Laboratories, Sony Corporation,
Atsugi, 243-0021, Japan

SOURCE: Journal of the Electrochemical Society (
2002), 149(6), A743-A747
CODEN: JESQAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 07 Jul 2002

AB A new synthesis route has been developed for LiMnFe₂yPO₄ (y = 0-0.9)
powders. A significant improvement in electrode performance has been achieved
by adding carbon black to the synthetic precursor. The carbon-containing
LiMnFe₂yPO₄ was synthesized under various conditions and the performance of
the cathodes was evaluated using coin cells. The samples were characterized by
X-ray diffraction, particle-size distribution measurements, scanning electron
microscope observations, and BET surface area measurements. The addition of
carbon black limited the particle size growth and enabled high electronic
conductivity. Another advantage is simplification of electrode preparation,
only needs the cathode powder to be mixed with binder. At large Mn content (y
= 0.75), a high capacity of 164 mAh/g has been achieved with an average
discharge voltage of 3.63 V (595 Wh/kg) at room temperature. In addition,
LiMnFe₂yPO₄ demonstrated excellent storage performance at elevated temps.
The thermal stability of the charged cathode was evaluated by
thermogravimetric and differential scanning calorimetric thermal analyses.

IT 213467-46-0, Iron lithium manganese phosphate (FeLi₂Mn(PO₄)₂)
(cathode; optimized high-manganese-content carbon black-containing
lithium manganese iron phosphates as cathodes for rechargeable
lithium batteries)

RN 213467-46-0 HCAPLUS

CN Iron lithium manganese phosphate (FeLi₂Mn(PO₄)₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 15365-14-7, Iron lithium phosphate (FeLiPO₄) 213467-46-0,
 Iron lithium manganese phosphate (FeLi₂Mn(PO₄)₂) 300858-61-1
 371145-95-8 407629-83-8 407640-52-2, Iron lithium manganese
 phosphate (Fe_{0.1}-1LiMn_{0.9}(PO₄)) 412351-36-1, Iron lithium
 manganese phosphate (Fe_{0.9}LiMn_{0.1}(PO₄)) 464174-83-2 464174-90-1
 474902-99-3, Iron lithium manganese phosphate (Fe_{0.35}LiMn_{0.65}(PO₄))
 474903-00-9, Iron lithium manganese phosphate (Fe_{0.3}LiMn_{0.7}(PO₄))
 474903-03-2, Iron lithium manganese phosphate (Fe_{0.1}LiMn_{0.9}(PO₄))
 474903-04-3
 (cathode; optimized high-manganese-content carbon black-containing
 lithium manganese iron phosphates as cathodes for rechargeable
 lithium batteries)

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L25 ANSWER 22 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:316793 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 137:235112

TITLE: A reversible lithium intercalation process in an
 ReO₃-type structure PnB9025

AUTHOR(S): Patoux, Sebastien; Dolle, Mickael; Rousse,
 Gwenaelle; Masquelier, Christian

CORPORATE SOURCE: Laboratoire de Reactivite et de Chimie des
 Solides, CNRS UMR 6007, Universite de Picardie
 Jules Verne, Amiens, 80039, Fr.

SOURCE: Journal of the Electrochemical Society (
 2002), 149(4), A391-A400

CODEN: JESQAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 28 Apr 2002

AB Among the large family of Wadsley-Roth-type phases, PnB9025 presents, as other
 shear structures such as H-Nb₂O₅, GeNb₁₈O₄₇, and VnB₉O₂₅, a peculiar
 arrangement of 3 + 3 + ∞ ReO₃-type blocks connected through XO₄ tetrahedra.
 The crystal structure was redetd. by combined Rietveld refinements of X-ray
 and neutron powder diffraction data, for the first time in the tetragonal
 space group I4 with a = 15.615(1) Å and c = 3.829(1) Å. The electrochem.
 insertion of lithium into LixPnB9025 reaches a value of x = 13.5, between 3.0
 and 1.0 V vs. Li⁺/Li at a slow cycling rate. Within this voltage window, in
 situ X-ray diffraction reveals that the reversible intercalation of lithium
 occurs through three single- and two two-phase regions. The variation of the
 lattice parameters as a function of x indicates a global change of ΔV/V = +10%
 associated with the reduction of Nb⁵⁺ to Nb⁴⁺ and then partly to Nb³⁺. At
 voltages lower than 1 V vs. Li⁺/Li, extra irreversible phenomena, such as
 electrolyte and/or carbon reduction were identified but, remarkably, highly
 crystalline particles of LixPnB9025 remain unaltered when discharging the cell
 for prolonged time down to 0.02 V vs. Li⁺/Li. The behavior of LixPnB9025 is

very similar to that of H-LixNb₂O₅ (Li_{0.3}Nb₂O₅) but different to that of Li_{0.3}Nb₂O₅ where irreversible reduction of V⁵⁺ to V²⁺ (in tetrahedral coordination) takes place.

IT 459412-78-3, Lithium niobium oxide phosphate
(Li_{0.3}Nb₂O₅(PO₄))
(formation and properties of; reversible lithium intercalation
process in an ReO₃-type structure PNB₂O₅ in secondary batteries)
RN 459412-78-3 HCAPLUS
CN Lithium niobium oxide phosphate (Li_{0.3}Nb₂O₅(PO₄)) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	21	17778-80-2
O4P	1	14265-44-2
Nb	9	7440-03-1
Li	6.3	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 75

IT 459412-77-2, Lithium niobium oxide phosphate (Li_{0.8}Nb₂O₅(PO₄))
459412-78-3, Lithium niobium oxide phosphate
(Li_{0.3}Nb₂O₅(PO₄))

(formation and properties of; reversible lithium intercalation
process in an ReO₃-type structure PNB₂O₅ in secondary batteries)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L25 ANSWER 23 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2002:256645 HCAPLUS Full-text

DOCUMENT NUMBER: 136:297382

TITLE: Carbon-coated or carbon-crosslinked redox
materials with transition metal-lithium oxide core
for use as battery electrodes

INVENTOR(S): Armand, Michel; Gauthier, Michel; Magnan,
Jean-Francois; Ravet, Nathalie

PATENT ASSIGNEE(S): Hydro-Quebec, Can.

SOURCE: PCT Int. Appl., 78 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002027824	A1	20020404	WO 2001-CA1350	20010921
<--				
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			

CA 2320661	A1	20020326	CA 2000-2320661	20000926
			<--	
CA 2423129	A1	20020404	CA 2001-2423129	20010921
			<--	
AU 2001093569	A	20020408	AU 2001-93569	20010921
			<--	
EP 1325526	A1	20030709	EP 2001-973907	20010921
			<--	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004509058	T	20040325	JP 2002-531518	20010921
			<--	
US 20040086445	A1	20040506	US 2003-362764	20030619
			<--	
US 7285260	B2	20071023		
US 20070134554	A1	20070614	US 2007-655084	20070119
			<--	
PRIORITY APPLN. INFO.:			CA 2000-2320661	A 20000926
			<--	
			WO 2001-CA1350	W 20010921
			<--	
			US 2003-362764	A1 20030619
			<--	

ED Entered STN: 05 Apr 2002

AB Carbon-coated redox materials suitable for use in battery electrodes consist of a core surrounded by a coating, or interconnected by carbon crosslinks, in which the core includes a composition of formula $\text{Li}_x\text{M}_1-\text{yM}'_y(\text{XO}_4)_n$, in which $y = 0-0.6$, $x = 0-2$, $n = 0-1.5$; M is a transition metal; and M' is a element of fixed valence selected from Mg^{2+} , Ca^{2+} , Al^{3+} , and Zn^{2+} , and X is S, P, and Si. Synthesis of the materials is carried out by reacting a balanced mixture of appropriate precursors in a reducing atmospheric, to adjust the valence of the transition metals, in the presence of a carbon source, which is then pyrolyzed. The resulting products exhibit an excellent elec. conductivity and a highly enhanced chemical activity.

IT 213467-46-0, Iron lithium manganese phosphate ($\text{FeLi}_2\text{Mn}(\text{PO}_4)_2$)

(electrodes containing; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

RN 213467-46-0 HCAPLUS

CN Iron lithium manganese phosphate ($\text{FeLi}_2\text{Mn}(\text{PO}_4)_2$) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

IT 407640-60-2, Iron lithium manganese phosphate sulfate ($\text{Fe}_1-2\text{Li}_1-2\text{Mn}_0-1[(\text{PO}_4),(\text{SO}_4)]$) 407640-61-3, Iron lithium titanium phosphate ($(\text{Fe},\text{Ti})\text{Li}_0.5-2(\text{PO}_4)_1.5$)

(metal source; carbon-coated or carbon-crosslinked redox materials with transition metal-lithium oxide core for use as battery electrodes)

RN 407640-60-2 HCAPLUS

CN Iron lithium manganese phosphate sulfate ($\text{Fe}_1-2\text{Li}_1-2\text{Mn}_0-1[(\text{PO}_4),(\text{SO}_4)]$) (9CI) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
O4S	0 - 1	14808-79-8
O4P	0 - 1	14265-44-2
Mn	0 - 1	7439-96-5
Li	1 - 2	7439-93-2
Fe	1 - 2	7439-89-6

RN 407640-61-3 HCAPLUS

CN Iron lithium titanium phosphate ((Fe,Ti)Li0.5-2(P04)1.5) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1.5	14265-44-2
Ti	0 - 1	7440-32-6
Li	0.5 - 2	7439-93-2
Fe	0 - 1	7439-89-6

IC ICM H01M004-48

ICS C01B025-37; C01B033-20; H01M004-58; H01M004-62; C01B017-96

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 7439-89-6D, Iron, mixed oxides 7439-96-5D, Manganese, mixed oxides
 7440-02-0D, Nickel, mixed oxides 7440-32-6D, Titanium, mixed oxides
 7440-47-3D, Chromium, mixed oxides 7440-48-4D, Cobalt, mixed oxides
 7440-50-8D, Copper, mixed oxides 7440-62-2D, Vanadium, mixed oxides
 13816-45-0, Triphylite 15365-14-7, Iron lithium phosphate (FeLiPO4)
 213467-46-9, Iron lithium manganese phosphate (FeLi2Mn(P04)2)
 (electrodes containing; carbon-coated or carbon-crosslinked redox
 materials with transition metal-lithium oxide core for use as
 battery electrodes)

IT 546-89-4, Lithium acetate 553-91-3, Lithium oxalate 554-13-2,
 Lithium carbonate 1309-37-1, Ferric oxide, reactions 1310-65-2,
 Lithium hydroxide 1313-13-9, Manganese dioxide, reactions
 1314-62-1, Vanadium pentoxide, reactions 1317-61-9, Magnetite,
 reactions 10045-86-0, Ferric phosphate 10102-24-6, Lithium
 silicate (Li2SiO3) 10377-48-7, Lithium sulfate 10377-52-3, Lithium
 phosphate (Li3PO4) 10421-48-4, Ferric nitrate 12057-24-8, Lithium
 oxide, reactions 12627-14-4 13453-80-0, Lithium dihydrogen
 phosphate 63985-45-5, Lithium orthosilicate 407640-52-2, Iron
 lithium manganese phosphate (Fe0.1-1LiMn0-0.9(P04)) 407640-53-3,
 Iron lithium magnesium phosphate (Fe0.7-1LiMg0-0.3(P04))
 407640-54-4, Calcium iron lithium phosphate (Ca0-0.3Fe0.7-1Li(P04))
 407640-55-5 407640-56-6, Iron lithium phosphate silicate
 (FeLi1-1.9(P04)0.1-1(SiO4)0-0.9) 407640-57-7 407640-58-8, Iron
 lithium manganese phosphate sulfate (Fe0-1Li1-1.2Mn0-0.2[(P04)], (S04))
 407640-59-9, Iron lithium manganese phosphate ((Fe,Mn)Li1-1.6(P04))
 407640-60-2, Iron lithium manganese phosphate sulfate
 (Fe1-2Li1-2Mn0-1[(P04)], (S04)) 407640-61-3, Iron lithium
 titanium phosphate ((Fe,Ti)Li0.5-2(P04)1.5)
 (metal source; carbon-coated or carbon-crosslinked redox materials
 with transition metal-lithium oxide core for use as battery
 electrodes)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

ACCESSION NUMBER: 2002:256644 HCAPLUS Full-text
 DOCUMENT NUMBER: 136:297381
 TITLE: Method for synthesis of carbon-coated redox materials with controlled size
 INVENTOR(S): Armand, Michel; Gauhtier, Michel; Magnan, Jean-Francois; Ravet, Nathalie
 PATENT ASSIGNEE(S): Hydro-Quebec, Can.
 SOURCE: PCT Int. Appl., 83 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: French
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002027823	A1	20020404	WO 2001-CA1349	20010921
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2320661	A1	20020326	CA 2000-2320661	20000926
CA 2422446	A1	20020404	CA 2001-2422446	20010921
AU 2001093568	A	20020408	AU 2001-93568	20010921
EP 1325525	A1	20030709	EP 2001-973906	20010921
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2004509447	T	20040325	JP 2002-531517	20010921
US 20040033360	A1	20040219	US 2003-362763	20030619
PRIORITY APPLN. INFO.: CA 2000-2320661 A 20000926 WO 2001-CA1349 W 20010921				

ED Entered STN: 05 Apr 2002

AB Carbon-coated redox materials suitable for use as battery electrodes and for fabrication of electrochromic materials, consist of compns. of formulas C-LixM1-y (XO4)n or LixM1-yM'y (XO4)n, in which: y = 0-0.6; x = 0-2; n = 1-1.5; M is a transition metal or a mixture of first-row transition metals; M' is a fixed-valent metal ion selected from Mg2+, Ca2+, Al3+, or Zn2+; and X is S, P, and Si. The resulting materials consist of particles coated with a conductive carbon layer. The compns. are prepared by reacting a balanced mixture of precursors in the appropriate proportions, including a pyrolysis step for the carbon-producing compound(s), such that the materials form a powdered composition with the desired formula, that has an elec. conductivity of >10-8 S/cm when compacted at 3750 kg/cm2.

IT E13467-46-0P, Iron lithium manganese phosphate (FeLi2Mn(P04)2)
 (redox cathode containing; synthesis of carbon-coated redox materials

for use as battery cathodes and in electrochromic devices)

RN 213467-46-0 HCAPLUS

CN Iron lithium manganese phosphate (FeLi2Mn(PO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	2	14265-44-2
Mn	1	7439-96-5
Li	2	7439-93-2
Fe	1	7439-89-6

IC ICM H01M004-48

ICS H01M004-58; H01M004-62; C01B025-37; C01B033-20

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 72

IT 7429-90-5P, Aluminum, uses 7439-95-4P, Magnesium, uses 7440-66-6P, Zinc, uses 7440-70-2P, Calcium, uses 13816-45-0P, Triphylite 15365-14-7P, Iron lithium phosphate (FeLiPO4) 213467-46-0P, Iron lithium manganese phosphate (FeLi2Mn(PO4)2) (redox cathode containing; synthesis of carbon-coated redox materials for use as battery cathodes and in electrochromic devices)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 25 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:830853 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 135:349452

TITLE: Electric cells and gas sensors using alkali ion conductive glass ceramic

INVENTOR(S): Fu, Jie

PATENT ASSIGNEE(S): Kabushiki Kaisha Ohara, Japan

SOURCE: U.S., 13 pp., Cont.-in-part of U.S. Ser. No. 923,233, abandoned.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 6315881	B1	20011113	US 1999-289242	19990409
			<--	
JP 09142874	A	19970603	JP 1995-320971	19951115
			<--	
JP 3126306	B2	20010122		
JP 10097811	A	19980414	JP 1997-383303	19970206
			<--	
JP 3012211	B2	20000221		
EP 857699	A2	19980812	EP 1997-110106	19970620
			<--	
EP 857699	A3	19980916		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
EP 1028094	A2	20000816	EP 2000-110476	19970620
			<--	
EP 1028094	A3	20000920		

EP 1028094 B1 20030521
 R: DE, FR, GB
 JP 2000026135 A 20000125 JP 1999-149686 19990528
 <--
 JP 4090148 B2 20080528
 PRIORITY APPLN. INFO.: JP 1995-320971 A 19951115
 <--
 JP 1996-115694 A 19960412
 <--
 JP 1997-383303 A 19970206
 <--
 US 1997-923233 B2 19970904
 <--
 JP 1996-48379 A 19960209
 <--
 EP 1997-110106 A3 19970620
 <--

ED Entered STN: 15 Nov 2001

AB A solid elec. cell includes a case, a neg. electrode, a pos. electrode and a solid electrolyte. The neg. electrode, pos. electrode and solid electrolyte are disposed in the case in such a manner that the neg. electrode opposes the pos. electrode through the solid electrolyte. The solid electrolyte is made of an alkali ion conductive glass-ceramic having ion conductivity no less than 10⁻³ S/cm at room temperature. A gas sensor includes a case, a neg. electrode, a pos. electrode, a solid electrolyte and a layer for which an electromotive force corresponding to the concentration of the gas is produced between the two electrodes. In the case, the neg. electrode opposes the pos. electrode through the solid electrolyte. The solid electrolyte is made of an alkali ion conductive glass-ceramic having ion conductivity no less than 10⁻³ S/cm at room temperature

IT 371788-57-7P

(elec. cells and gas sensors using alkali ion conductive glass ceramic)

RN 371788-57-7 HCAPLUS

CN Aluminum gallium lithium titanium phosphate silicate
 ([Al,Ga,Li,Ti,(PO₄),(SiO₄)]O₄) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0 - 0.6	17181-37-2
O4P	2.4 - 3	14265-44-2
Ga	0 - 0.4	7440-55-3
Ti	1.6 - 2	7440-32-6
Li	1 - 2	7439-93-2
Al	0 - 0.4	7429-90-5

IC ICM G01N027-406

ICS C03C010-10; C03C004-18

INCL 204424000

CC 72-3 (Electrochemistry)

Section cross-reference(s): 57

IT 201010-48-2P 371788-57-7P

(elec. cells and gas sensors using alkali ion conductive glass ceramic)

REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ACCESSION NUMBER: 2001:796402 HCAPLUS Full-text
 DOCUMENT NUMBER: 135:346863
 TITLE: Cathode active material for nonaqueous electrolyte battery
 INVENTOR(S): Li, Guohua; Yamada, Atsuo
 PATENT ASSIGNEE(S): Sony Corporation, Japan
 SOURCE: Eur. Pat. Appl., 47 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1150367	A2	20011031	EP 2001-109945	20010424
EP 1150367	A3	20070411	<--	
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, CY, TR, AL, MK				
JP 2001307731	A	20011102	JP 2000-128999	20000425
JP 2001307732	A	20011102	JP 2000-129000	20000425
CA 2344903	A1	20011025	CA 2001-2344903	20010423
TW 525313	B	20030321	TW 2001-90109594	20010423
MX 2001PA04028	A	20030820	MX 2001-PA4028	20010423
CN 1322023	A	20011114	CN 2001-121243	20010425
US 20010055718	A1	20011227	US 2001-842483	20010425
US 6749967	B2	20040615	<--	
KR 809854	B1	20080304	KR 2001-22364	20010425
PRIORITY APPLN. INFO.:			JP 2000-128999	A 20000425
			<--	
			JP 2000-129000	A 20000425
			<--	

ED Entered STN: 02 Nov 2001

AB A pos. electrode active material and a nonaq. electrolyte cell which uses the pos. electrode active material are disclosed. The cell has a high discharge voltage without lowering the capacity and superior charging/discharging characteristics. To this end, the pos. electrode active material contains a compound represented by the general formula $\text{Li}_x\text{MnyFe}_1-y\text{PO}_4$, wherein $0 < x \leq 2$ and $0.5 < y < 0.95$, or a compound represented by the general formula $\text{Li}_x\text{MnyAl}_1-y\text{PO}_4$, where $0 < x \leq 2$ and $0 < y < 1$ and wherein A is a metal element selected from among Ti, Zn, Mg and Co or plural metal elements selected from among Ti, Fe, Zn, Mg and Co.
 IT 371145-93-6, Iron lithium manganese phosphate
 (Fe0.05-0.5Li0-2Mn0.5-0.95(PO4))
 (cathode active material for nonaq. electrolyte battery)
 RN 371145-93-6 HCAPLUS
 CN Iron lithium manganese phosphate (Fe0.05-0.5Li0-2Mn0.5-0.95(PO4)) (CA INDEX NAME)

Component	Ratio	Component	Registry Number

O4P		1		14265-44-2
Mn		0.5 - 0.95		7439-96-5
Li		0 - 2		7439-93-2
Fe		0.05 - 0.5		7439-89-6

IC ICM H01M004-50

ICS H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 108-32-7, Propylene carbonate 616-38-6, Dimethylcarbonate
 7429-90-3, Aluminum, uses 21324-40-3, Lithium hexafluorophosphate
 371145-93-6, Iron lithium manganese phosphate
 (Fe_{0.05}-0.5Li₀-2Mn_{0.5}-0.95(PO₄))
 (cathode active material for nonaq. electrolyte battery)

L25 ANSWER 27 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:688464 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 135:347775

TITLE: Li₃Sc₂-xFe_x(PO₄)₃ thin films and powders prepared by ultrasonic spray pyrolysis

AUTHOR(S): Ivanov-Schitz, A. K.; Nistuk, A. V.; Demianets, L. N.; Chaban, N. G.

CORPORATE SOURCE: Institute of Crystallography, Russian Academy of Science, Moscow, Russia

SOURCE: Solid State Ionics (2001), 144(1,2), 133-141

CODEN: SSIOD3; ISSN: 0167-2738

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 20 Sep 2001

AB Thin films of Li₃Sc₂-xFe_x(PO₄)₃ (x=0.5, 2) solid electrolytes have been prepared on quartz glass substrates by ultrasonic spray pyrolysis (USP) using aqueous solns. of LiH₂PO₄, Sc(NO₃)₃ and Fe(NO₃)₃ at substrate temperature of 500-700°C. The amorphous as-deposited films were converted into crystalline materials by heat treatment at 800-1000°C. The optimal deposition parameters for formation of uniform precursor films with good adhesion to the substrate were determined. The dense films composed of fine columnar grains were obtained using the 3 cycles of deposition and annealing. The room temperature ionic conductivity of the film with the composition x=0.5 was 5+10⁻⁶ S/cm. The superionic γ-phase of USP ceramics of composition Li₃Sc₂-xFe_x(PO₄)₃ (0<x≤0.6) was stabilized at room temperature, which may be caused by slight structural distortions and changes in the interactions between the lithium ions during Sc³⁺→Fe³⁺ substitution. The highest ionic conductivity σ(25°C) ≈ 1+10⁻⁵ S/cm was observed for ceramics with x=0.4.

IT 141051-47-0P, Iron lithium scandium phosphate
 Fe_{0.2}Li₃Sc_{1.8}(PO₄)₃ 155694-16-9P, Iron lithium scandium
 phosphate Fe_{0.4}Li₃Sc_{1.6}(PO₄)₃ 155694-17-0P, Iron lithium
 scandium phosphate Fe_{0.6}Li₃Sc_{1.4}(PO₄)₃ 371758-79-1P, Iron
 lithium scandium phosphate (Fe_{0.1}Li₃Sc_{1.9}(PO₄)₃) 371758-80-1P
 , Iron lithium scandium phosphate (Fe_{0.3}Li₃Sc_{1.7}(PO₄)₃)
 (powders and films; ultrasonic spray pyrolysis preparation and
 properties of Li₃Sc₂-xFe_x(PO₄)₃ thin films and powders)

RN 141051-47-0 HCAPLUS

CN Iron lithium scandium phosphate (Fe_{0.2}Li₃Sc_{1.8}(PO₄)₃) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number

O4P		3		14265-44-2
Sc		1.8		7440-20-2
Li		3		7439-93-2
Fe		0.2		7439-89-6

RN 155694-16-9 HCAPLUS
 CN Iron lithium scandium phosphate (Fe0.4Li3Sc1.6(PO4)3) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O4P		3		14265-44-2
Sc		1.6		7440-20-2
Li		3		7439-93-2
Fe		0.4		7439-89-6

RN 155694-17-0 HCAPLUS
 CN Iron lithium scandium phosphate (Fe0.6Li3Sc1.4(PO4)3) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O4P		3		14265-44-2
Sc		1.4		7440-20-2
Li		3		7439-93-2
Fe		0.6		7439-89-6

RN 371758-79-1 HCAPLUS
 CN Iron lithium scandium phosphate (Fe0.1Li3Sc1.9(PO4)3) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O4P		3		14265-44-2
Sc		1.9		7440-20-2
Li		3		7439-93-2
Fe		0.1		7439-89-6

RN 371758-80-4 HCAPLUS
 CN Iron lithium scandium phosphate (Fe0.3Li3Sc1.7(PO4)3) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O4P		3		14265-44-2
Sc		1.7		7440-20-2
Li		3		7439-93-2
Fe		0.3		7439-89-6

CC 57-2 (Ceramics)

Section cross-reference(s): 52, 76

IT 36058-25-0P, Iron lithium phosphate Fe2Li3(PO4)3 87796-15-4P,
 Lithium scandium phosphate Li3Sc2(PO4)3 141051-47-0P, Iron
 lithium scandium phosphate Fe0.2Li3Sc1.8(PO4)3 155694-16-9P,
 Iron lithium scandium phosphate Fe0.4Li3Sc1.6(PO4)3
 155694-17-0P, Iron lithium scandium phosphate
 Fe0.6Li3Sc1.4(PO4)3 371758-79-1P, Iron lithium scandium
 phosphate (Fe0.1Li3Sc1.9(PO4)3) 371758-80-4P, Iron lithium
 scandium phosphate (Fe0.3Li3Sc1.7(PO4)3) 371758-81-5P
 (powders and films; ultrasonic spray pyrolysis preparation and

properties of Li3Sc2-xFex(PO4)3 thin films and powders)
 REFERENCE COUNT: 29 THERE ARE 29 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L25 ANSWER 28 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:414793 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 135:35187

TITLE: Batteries comprising solid electrolytes sandwiched
 in between spinel-type lithium manganate cathodes
 and spinel-type lithium titanate anodes
 INVENTOR(S): Hara, Toru; Kitahara, Nobuyuki; Uemura, Toshihiko;
 Mishima, Hiromitsu; Magome, Shinji; Osaki, Makoto;
 Higuchi, Hisashi

PATENT ASSIGNEE(S): Kyocera Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001155763	A	20010608	JP 1999-336715	19991126
			<--	
PRIORITY APPLN. INFO.:			JP 1999-336715	19991126
			<--	

ED Entered STN: 08 Jun 2001

AB The batteries comprise solid electrolytes of (A) sintered materials of Li2MnO3
 and Li1+x+yMxTi2-xSiypP3-yO12 (I; M = Al or Ga; x = 0-0.4; 0 < y ≤ 0.6) on the
 cathode side and (B) sintered materials of Li2TiO3 and I on the anode side,
 sandwiched in between the electrodes and placed in an outer package. Such
 batteries with cathodes consisting of Li1+xMn2-xO4 (x = 0.05-0.2) or
 Li1+xNiyMn2-x-yO4 (x = 0-0.2; 0.4 ≤ y < 0.6) and anodes consisting of
 Li1+xTi2-xO4 (x = 0.25-0.40) are also claimed. Batteries with low surface
 resistance between the electrodes and the electrolytes are obtained. The
 batteries are suitable for use in personal digital assistance.

IT 343950-39-0 343950-42-5

(electrolyte; batteries comprising lithium titanium phosphate
 silicate electrolytes showing low surface resistances with lithium
 spinel oxide electrodes for use in personal digital assistances)

RN 343950-39-0 HCAPLUS

CN Aluminum lithium titanium phosphate silicate (Al0-0.4Li1-2Ti1.4-
 2(PO4)2.4-3(SiO4)0-0.6) (9CI) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4Si	0 - 0.6	17181-37-2
O4P	2.4 - 3	14265-44-2
Ti	1.4 - 2	7440-32-6
Li	1 - 2	7439-93-2
Al	0 - 0.4	7429-90-5

RN 343950-42-5 HCAPLUS

CN Gallium lithium titanium phosphate silicate (Ga0-0.4Li1-2Ti1.4-
 2(PO4)2.4-3(SiO4)0-0.6) (9CI) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
O4Si	0 - 0.6	17181-37-2
O4P	2.4 - 3	14265-44-2
Ga	0 - 0.4	7440-55-3
Ti	1.4 - 2	7440-32-6
Li	1 - 2	7439-93-2

IC ICM H01M010-36

ICS H01M004-02; H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 57

IT 343950-37-8 343950-39-0 343950-42-5

(electrolyte; batteries comprising lithium titanium phosphate silicate electrolytes showing low surface resistances with lithium spinel oxide electrodes for use in personal digital assistants)

L25 ANSWER 29 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:351119 HCAPLUS Full-text

DOCUMENT NUMBER: 135:124791

TITLE: Study on lithium fast ion conductors

Li1+2x+yAlxEuTi2-x-ySixP3-xO12 system

AUTHOR(S): Fan, Rui-quan; Wang, Wen-j; Lin, Shen

CORPORATE SOURCE: Department of Chemistry, Fuzhou University,

Fuzhou, Fujian, 350002, Peop. Rep. China

SOURCE: Fuzhou Daxue Xuebao, Ziran Kexueban (2001

), 29(1), 83-85

CODEN: FDXKEN; ISSN: 1000-2243

PUBLISHER: Fuzhou Daxue Xuebao Bianjibu

DOCUMENT TYPE: Journal

LANGUAGE: Chinese

ED Entered STN: 17 May 2001

AB Natural layered aluminosilicate kaolinite Al4[Si4O10](OH)8 is used as a starting material for preparing a new system of lithium fast ion conductors Li1+2x+yAlxEuTi2-x-ySixP3-xO12 by high temperature (800-1000°C) solid phase reaction for about 20 h. A solid solution phase with R.hivin.3C structure exists in a limited composition region. The elec. measurements indicate that the maximum conductivity in the above system (referred to as Al-Eu-Lisicon) is the initial composition with $x = 0.2$ and $y = 0.1$ under which its conductivity reaches up to 9.98 m/cm at 400°C and the activation energy is 34.0 kJ/mol.

IT 350681-79-7
(lithium fast ion conductors Li1+2x+yAlxEuTi2-x-ySixP3-xO12 system)

RN 350681-79-7 HCAPLUS

CN Aluminum europium lithium titanium phosphate silicate
(Al0.1-0.8Eu0.1-0.7Li1.3-3.3Ti0.5-1.8(PO4)2.2-2.9(SiO4)0.1-0.8) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1 - 0.8	17181-37-2
O4P	2.2 - 2.9	14265-44-2
Eu	0.1 - 0.7	7440-53-1
Ti	0.5 - 1.8	7440-32-6
Li	1.3 - 3.3	7439-93-2
Al	0.1 - 0.8	7429-90-5

CC 52-2 (Electrochemical, Radiational, and Thermal Energy

Technology)

Section cross-reference(s): 72, 76

IT 350681-79-7 350681-81-1

(lithium fast ion conductors $\text{Li1}+2\text{x}+\text{yAlxEuYTi2-x-ySixP3-xO12}$ system)

L25 ANSWER 30 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:192597 HCAPLUS Full-text

DOCUMENT NUMBER: 134:210598

TITLE: Preparation of lithium-containing phosphates for battery use

INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: U.S., 13 pp.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 6203946	B1	20010320	US 1998-204944	19981203
			<--	
US 20010021472	A1	20010913	US 2001-776843	20010205
			<--	
US 6720110	B2	20040413		
US 20040086784	A1	20040506	US 2003-681563	20031006
			<--	
PRIORITY APPLN. INFO.:			US 1996-717979	A1 19960923
			<--	
			WO 1997-US15544	A1 19970904
			<--	
			US 1998-204944	A1 19981203
			<--	
			US 2001-776843	A1 20010205
			<--	

ED Entered STN: 21 Mar 2001

AB The invention provides an electrochem. cell which comprises a first electrode and a second electrode which is a counter electrode to the first electrode. The first electrode comprises a phosphorous compound of the nominal general formula Li3E'aE''b(PO4)3 , desirably at least one E is a metal; and preferably, Li3M'M''(PO4)3 . E' and E'' are the same or different from one another. Where E' and E'' are the same, they are preferably metals having more than one oxidation state. Where E' and E'' are different from one another, they are preferably selected from the group of metals where at least one of E' and E'' has more than one oxidation state.

IT 329025-35-6P, Iron lithium phosphate (Fe2Li1-3(PO4)3)
(preparation of lithium-containing phosphates for battery use)

RN 329025-35-6 HCAPLUS

CN Iron lithium phosphate (Fe2Li1-3(PO4)3) (CA INDEX NAME)

Component	Ratio	Component
-----	-----	Registry Number
O4P	3	14265-44-2
Li	1 - 3	7439-93-2
Fe	2	7439-89-6

IC ICM H01M004-58

ICS H01M004-48
 INCL 429231100
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 36058-25-0P, Iron lithium phosphate $\text{Fe}_2\text{Li}_3(\text{PO}_4)_3$ 69104-85-4P, Chromium lithium phosphate $\text{Cr}_2\text{Li}_3(\text{PO}_4)_3$ 84159-18-2P, Lithium vanadium phosphate $\text{Li}_3\text{V}_2(\text{PO}_4)_3$ 285564-74-1P 329025-35-6P, Iron lithium phosphate ($\text{Fe}_2\text{Li}_3(\text{PO}_4)_3$) 329025-36-7P 329025-38-9P 329025-39-0P
 (preparation of lithium-containing phosphates for battery use)
 REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 31 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2001:179635 HCAPLUS Full-text
 DOCUMENT NUMBER: 134:210518
 TITLE: Process for large scale fabrication of lithium polymer batteries with solid electrolytes in the film technology
 INVENTOR(S): Meislitz, Karl Heinz
 PATENT ASSIGNEE(S): Bangert, Wolfgang, Germany; Sebastian, Rudolf
 SOURCE: Ger. Offen., 12 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 19941861	A1	20010315	DE 1999-19941861	19990902
			<--	
PRIORITY APPLN. INFO.:			DE 1999-19941861	19990902
			<--	

ED Entered STN: 15 Mar 2001

AB Films for cathodes and anodes as well as for the electrolytes are pulled from pastes of suitable composition and preparation Cathode pastes are prepared from: 3-10% polymer or copolymer, PEO, polystyrene, polyvinyl chloride, polyvinylidene fluoride, or polyvinylidene fluoride-hexafluoropropylene copolymer (PVDF-HFP); 4-12% plasticizer (e.g., dibutylphthalate or dioctyl phthalate); 20-60 g% intercalation material (e.g., LiCoO_2 , LiNiO_2 , $\text{LiCoNi}_{1-x}\text{O}_2$, LiMn_2O_4 or VOx); 2-10% elec. conductor (e.g., graphite powder or amorphous C); and 40-80% solvent (e.g., acetone). Anode paste comprises: 3-10% polymer or copolymer (e.g., PEO, polystyrene, PVC, PVDF, or PVDF-HFP copolymer), 4-12% plasticizer (di-Bu phthalate or dioctyl phthalate), 20-40% elec. conductor (graphite powder or amorphous C), and 40-80% solvent (acetone). The electrolyte paste comprises: 3-10 g% polymer or copolymer (PEO, polystyrene, PVC, PVDF or hexafluoropropylene- vinylidene fluoride copolymer), 4-12% plasticizer (DBP or DOP), 20-40% ionic conductor ($\text{Li}_9\text{AlSi}_8\text{O}_{18}$, $\text{Li}_3\text{Al}_3\text{Ti}_{1.7}(\text{PO}_4)_3$, $\text{LiTi}_2(\text{PO}_4)_3$, Li_2O or $\text{Li}_4\text{SiO}_4\cdot\text{Li}_3\text{PO}_4$), 2-10% ionic conductor (LiClO_4 , LiBF_4 , LiCl , LiBr , or LiI) and 40-80 g% solvent (acetone).
 IT 328899-26-9, Lithium titanium oxide phosphate ($\text{Li}_3\text{Ti}_2\text{O}(\text{PO}_4)_3$)
 (process for large scale fabrication of lithium polymer batteries with solid electrolytes in film technol.)
 RN 328899-26-9 HCAPLUS
 CN Lithium titanium oxide phosphate ($\text{Li}_3\text{Ti}_2\text{O}(\text{PO}_4)_3$) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number

O	1	17778-80-2
O4P	3	14265-44-2
Ti	2	7440-32-6
Li	3	7439-93-2

IC ICM H01M004-04

ICS H01M004-62; H01M004-48

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

IT 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide
 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide
 14283-07-9, Lithium tetrafluoroborate 30622-39-0, Lithium titanium
 phosphate LiTi2(PO4)3 120479-61-0, Aluminum lithium titanium
 phosphate Al0.3Li1.3Ti1.7(PO4)3 138728-82-2, Lithium phosphate
 silicate (Li3.5(PO4)0.5(SiO4)0.5) 180728-17-0, Aluminum lithium
 oxide silicate (AlLi9O4(SiO4)) 328899-26-9, Lithium titanium
 oxide phosphate (Li3Ti2O(PO4)3)
 (process for large scale fabrication of lithium polymer batteries
 with solid electrolytes in film technol.)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L25 ANSWER 32 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:83048 HCAPLUS Full-text

DOCUMENT NUMBER: 134:273893

TITLE: The synthesis and characterization of new lithium
 fast ion conductors Li1+2x+2yAlxZnyTi2-x-ySixP3-
 xO12 system

AUTHOR(S): Zhang, Yurong; Chen, Wenqing; Wang, Wenji
 CORPORATE SOURCE: Department of Chemistry, Fuzhou University,
 Fuzhou, 350002, Peop. Rep. China

SOURCE: Solid State Ionics: Materials and Devices,
 [Proceedings of the Asian Conference], 7th,
 Fuzhou, China, Oct. 29-Nov. 4, 2000 (2000***),
 , 69-73. Editor(s): Chowdari, B. V. K.; Wang,
 Wenji. World Scientific Publishing Co. Pte. Ltd.:
 Singapore, Singapore.
 CODEN: 69AWLC

DOCUMENT TYPE: Conference

LANGUAGE: English

ED Entered STN: 05 Feb 2001

AB New lithium fast ion conductors Li1+2x+2yAlxZnyTi2-x-ySixP3-xO12
 system based on LiTi2(PO4)3 were prepd. by high temp.
 (900-1150°C) solid phase reaction for about 20 h using refined
 natural kaolinite as a starting material. The syntheses temps.
 decreased with increasing x and y for the above system. XRD anal.
 indicates that a Lisicon phase with the R3c space group can be found
 in the compn. range of x=0.1, y≤0.7 and y=0.3, x≤0.3,
 while only when x=0.1, y≤0.2 can a single lisicon phase exist.
 A.C. impedance measurements showed that the best sample was
 characterized by the ionic cond. of 1.61×10⁻⁴ S/cm at room
 temp. and 4.83×10⁻² S/cm at 673 K, its activation energy being
 49.4 kJ/mol in the temp. range of 473-673 K.

IT ***332079-96-6P 332079-97-7P 332079-98-8P

332079-99-9P 332080-00-9P

(synthesis and characterization of lithium fast ion conductor
 Li1+2x+2yAlxZnyTi2-x-ySixP3-xO12 system)

RN 332079-96-6 HCAPLUS

CN Aluminum lithium titanium zinc phosphate silicate
(Al_{0.1}Li₂Ti_{1.5}Zn_{0.4}(PO₄)_{2.9}(SiO₄)_{0.1}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1	17181-37-2
O4P	2.9	14265-44-2
Zn	0.4	7440-66-6
Ti	1.5	7440-32-6
Li	2	7439-93-2
Al	0.1	7429-90-5

RN 332079-97-7 HCAPLUS

CN Aluminum lithium titanium zinc phosphate silicate
(Al_{0.1}Li_{2.2}Ti_{1.4}Zn_{0.5}(PO₄)_{2.9}(SiO₄)_{0.1}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1	17181-37-2
O4P	2.9	14265-44-2
Zn	0.5	7440-66-6
Ti	1.4	7440-32-6
Li	2.2	7439-93-2
Al	0.1	7429-90-5

RN 332079-98-8 HCAPLUS

CN Aluminum lithium titanium zinc phosphate silicate
(Al_{0.1}Li_{2.6}Ti_{1.2}Zn_{0.7}(PO₄)_{2.9}(SiO₄)_{0.1}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1	17181-37-2
O4P	2.9	14265-44-2
Zn	0.7	7440-66-6
Ti	1.2	7440-32-6
Li	2.6	7439-93-2
Al	0.1	7429-90-5

RN 332079-99-9 HCAPLUS

CN Aluminum lithium titanium zinc phosphate silicate
(Al_{0.2}Li₂Ti_{1.5}Zn_{0.3}(PO₄)_{2.8}(SiO₄)_{0.2}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.2	17181-37-2
O4P	2.8	14265-44-2
Zn	0.3	7440-66-6
Ti	1.5	7440-32-6
Li	2	7439-93-2
Al	0.2	7429-90-5

RN 332080-00-9 HCAPLUS

CN Aluminum lithium titanium zinc phosphate silicate
(Al_{0.3}Li_{2.2}Ti_{1.4}Zn_{0.3}(PO₄)_{2.7}(SiO₄)_{0.3}) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4Si	0.3	17181-37-2
O4P	2.7	14265-44-2
Zn	0.3	7440-66-6
Ti	1.4	7440-32-6
Li	2.2	7439-93-2
Al	0.3	7429-90-5

CC 76-1 (Electric Phenomena)

Section cross-reference(s): 52

IT 332079-94-4P 332079-95-5P 332079-96-6P

332079-97-7P 332079-98-8P 332079-99-9P

332080-00-9P

(synthesis and characterization of lithium fast ion conductor
Li1+2x+2yAlxZnyTi2-x-ySixP3-xO12 system)REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L25 ANSWER 33 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:19967 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 134:149942

TITLE: Enhancement of discharge capacity of Li3V2(PO4)3
by stabilizing the orthorhombic phase at room
temperatureAUTHOR(S): Sato, Mineo; Ohkawa, Hirokazu; Yoshida, Kenji;
Saito, Mai; Uematsu, Kazuyoshi; Toda, KenjiCORPORATE SOURCE: Department of Chemistry and Chemical Engineering,
Faculty of Engineering, Niigata University,
Niigata, 950-2181, JapanSOURCE: Solid State Ionics (2000), 135(1-4),
137-142

CODEN: SSIOD3; ISSN: 0167-2738

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 10 Jan 2001

AB Li3V2(PO4)3 and solid solns. of Li3-2x(V1-xZrx)2(PO4) 3 were prepared by a
solid state reaction. A high temperature orthorhombic phase of Li3V2(PO4)3
with a β -Fe2(SO4)3-type was successfully stabilized at room temperature by
substituting Zr for V with substitution ratios beyond x=0.05. The pure
material of Li3V2(PO4)3 exhibited a cathode performance with two well defined
regions of plateau at around 3.7 and 4.1 V vs. Li/Li+ upon charging and 3.6
and 4.0 V vs. Li/Li+ upon discharging, resp., suggesting two types of phases
produced upon the charge/discharge process. On the other hand, the cathode
performance of the orthorhombic stabilized materials showed almost the same
charge/discharge voltages as those of the pure material, but, with two
plateaus slightly sloping, showed a considerably improved charge/discharge
cycle performance compared to that of the pure material. Such improvement on
the charge/discharge cycle performance is suggested to come from the
disordered lithium ion arrangement in the orthorhombic phase.

IT 33204-07-5, Lithium vanadium zirconium phosphate

(Li2.8V1.8Zr0.2(PO4)3) 33204-08-6, Lithium vanadium

zirconium phosphate (Li2.6V1.6Zr0.4(PO4)3)

(enhancement of discharge capacity of Li3V2(PO4)3 by stabilizing
the orthorhombic phase at room temperature)

RN 33204-07-5 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li2.8V1.8Zr0.2(PO4)3) (CA INDEX

NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.2	7440-67-7
V	1.8	7440-62-2
Li	2.8	7439-93-2

RN 323204-08-6 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li₂.6V₁.6Zr_{0.4}(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.4	7440-67-7
V	1.6	7440-62-2
Li	2.6	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 84159-18-2, Lithium vanadium phosphate(Li₃V₂(PO₄)₃)
 323204-07-5, Lithium vanadium zirconium phosphate
 (Li₂.8V₁.8Zr_{0.2}(PO₄)₃) 323204-08-6, Lithium vanadium
 zirconium phosphate (Li₂.6V₁.6Zr_{0.4}(PO₄)₃)
 (enhancement of discharge capacity of Li₃V₂(PO₄)₃ by stabilizing
 the orthorhombic phase at room temperature)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L25 ANSWER 34 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:774123 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 133:352634

TITLE: Electrode materials having increased surface conductivity

INVENTOR(S): Ravet, Nathalie; Besner, Simon; Simoneau, Martin;
 Vallee, Alain; Armand, Michel; Magnan,
 Jean-francois

PATENT ASSIGNEE(S): Hydro-Quebec, Can.

SOURCE: Eur. Pat. Appl., 22 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1049182	A2	20001102	EP 2000-401207	20000502
			<--	
EP 1049182	A3	20040211		
EP 1049182	B1	20080102		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
CA 2270771	A1	20001030	CA 1999-2270771	19990430
			<--	

CA 2307119	A1	20001030	CA 2000-2307119	20000428
			<--	
CA 2625896	A1	20001030	CA 2000-2625896	20000428
			<--	
JP 2001015111	A	20010119	JP 2000-132779	20000501
			<--	
EP 1796189	A2	20070613	EP 2007-4289	20000502
			<--	
EP 1796189	A3	20070620		
R: DE, FR, GB, IT				
US 20020195591	A1	20021226	US 2002-175794	20020621
			<--	
US 6855273	B2	20050215		
US 20040140458	A1	20040722	US 2003-740449	20031222
			<--	
US 6962666	B2	20051108		
US 20060060827	A1	20060323	US 2005-266339	20051104
			<--	
US 7344659	B2	20080318		
JP 2008186807	A	20080814	JP 2008-41303	20080222
			<--	
PRIORITY APPLN. INFO.:			CA 1999-2270771	A 19990430
			<--	
			CA 2000-2307119	A3 20000428
			<--	
			US 2000-560572	B1 20000428
			<--	
			JP 2000-132779	A3 20000501
			<--	
			EP 2000-401207	A3 20000502
			<--	
			US 2002-175794	A3 20020621
			<--	
			US 2003-740449	A1 20031222
			<--	
ED Entered STN: 05 Nov 2000				
AB	Intercalated electrode materials comprising complex oxides, especially Li oxides, are prepared, suitable for redox reaction by exchange of alkali metal ions (especially Li) and electrons with an electrolyte. The complex oxide electrodes can be used in batteries, supercapacitors or electrochromic light moderators. The complex oxides have the general formula $AaMmZzOoNnFf$, where A is alkali metal (e.g., Li), M is ≥ 1 transition metal (e.g., Fe, Mn, V, Ti, Mo, Nb, Zn, W), Z is ≥ 1 nonmetal (e.g., P, S, Si, Se, As, Ge, B, Sn), and a,m,z,o,n,f are chosen for elec. neutrality. A conductive carbon coating is formed or deposited on the surface of the electrode material, e.g., by pyrolysis of an organic material, hydrocarbons or polymers, for increased surface conductivity			
IT	252943-50-3P, Lithium vanadium phosphate silicate Li _{3.5} V ₂ (PO ₄) _{2.5} (SiO ₄) _{0.5} (electrode materials having increased surface conductivity)			
RN	252943-50-3 HCAPLUS			
CN	Lithium vanadium phosphate silicate (Li _{3.5} V ₂ (PO ₄) _{2.5} (SiO ₄) _{0.5}) (CA INDEX NAME)			

Component	Ratio	Component
		Registry Number
=====+	=====+	=====
O4Si	0.5	17181-37-2
O4P	2.5	14265-44-2
V	2	7440-62-2

Li | 3.5 | 7439-93-2

IC ICM H01M004-58
ICS H01M004-48; H01M004-62
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 72, 76
IT 7440-44-0P, Carbon, uses 15365-14-7P, Iron lithium phosphate (FeLiPO4) 30734-08-8P, Lithium manganese silicate Li₂MnSiO₄ 39302-37-9P, Lithium titanium oxide 180984-63-8P, Lithium magnesium titanium oxide 252943-50-3P, Lithium vanadium phosphate silicate Li_{3.5}V₂(PO₄)_{2.5}(SiO₄)_{0.5} 304905-30-4P 304905-31-5P, Iron lithium fluoride (FeLiO₂FeF₃) 304905-32-6P, Lithium manganese nitride oxide (Li₃MnNO) 304905-33-7P 304905-34-8P 304905-35-9P, Lithium magnesium titanium oxide (Li_{3.5}Mg_{0.5}Ti₄O₁₂) 304905-36-0P, Iron lithium phosphorus silicon oxide 304905-37-1P 304905-38-2P, Iron lithium phosphorus fluoride oxide 304905-39-3P 304905-40-6P 304905-41-7P 304905-42-8P
(electrode materials having increased surface conductivity)

L25 ANSWER 35 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:725896 HCAPLUS Full-text

DOCUMENT NUMBER: 133:298811

TITLE: Method for manufacturing active material of positive plate for nonaqueous electrolyte secondary cell

INVENTOR(S): Li, Guohua; Yamada, Atsuo

PATENT ASSIGNEE(S): Sony Corporation, Japan

SOURCE: PCT Int. Appl., 88 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000060679	A1	20001012	WO 2000-JP1915	20000328
<--				
W: CA, CN, JP, KR, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
CA 2334386	A1	20001012	CA 2000-2334386	20000328
<--				
EP 1094532	A1	20010425	EP 2000-911428	20000328
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
TW 494595	B	20020711	TW 2000-89106123	20000331
<--				
PRIORITY APPLN. INFO.:			JP 1999-99407	A 19990406
			<--	
			JP 1999-274746	A 19990928
			<--	
			JP 1999-274747	A 19990928
			<--	
			WO 2000-JP1915	W 20000328
<--				

ED Entered STN: 13 Oct 2000

AB A method for manufacturing an active material of a pos. plate which is doped/dedoped well reversely with/of lithium comprises mixing materials including a reducing agent to be used as a synthetic material of a compound whose composition is expressed by a general formula $\text{Li}_x\text{M}_y\text{PO}_4$ (where $0 < x \leq 2$, $0.8 \leq y \leq 1.2$, and M is at least one element selected from 3d-transition metals) to produce a precursor and firing the precursor..

IT 213467-46-0P, Iron lithium manganese phosphate ($\text{FeLi}_2\text{Mn}(\text{PO}_4)_2$) (manufacture of active material of pos. plate for nonaq. electrolyte secondary cell)

RN 213467-46-0 HCAPLUS

CN Iron lithium manganese phosphate ($\text{FeLi}_2\text{Mn}(\text{PO}_4)_2$) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O4P	2		14265-44-2
Mn	1		7439-96-5
Li	2		7439-93-2
Fe	1		7439-89-6

IC ICM H01M004-58
ICS H01M010-40; H01M004-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 13826-59-0P, Lithium manganese phosphate 213467-46-0P, Iron lithium manganese phosphate ($\text{FeLi}_2\text{Mn}(\text{PO}_4)_2$) (manufacture of active material of pos. plate for nonaq. electrolyte secondary cell)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 36 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:688509 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 133:255027

TITLE: Rechargeable lithium battery with lithium-containing phosphate active materials

INVENTOR(S): Barker, Jeremy

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: PCT Int. Appl., 47 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000057505	A1	20000928	WO 2000-US4401	20000222

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W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW

RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

US 6153333 A 20001128 US 1999-274371 19990323

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CA 2367338      A1      20000928      CA 2000-2367338      20000222
EP 1173897      A1      20020123      EP 2000-921341      20000222
EP 1173897      B1      20080618
  R:  AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
      PT, IE, SI, LT, LV, FI, RO, CY
JP 2002540569      T      20021126      JP 2000-607293      20000222
AU 764110      B2      20030807      AU 2000-41680      20000222
US 6890686      B1      20050510      US 2001-936675      20000222
AT 398840      T      20080715      AT 2000-921341      20000222
MX 2001PA09565      A      20020311      MX 2001-PA9565      20010921
IN 2001KN01067      A      20050708      IN 2001-KN1067      20011012
PRIORITY APPLN. INFO.:      US 1999-274371      A1 19990323
      WO 2000-US4401      W 20000222

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ED Entered STN: 29 Sep 2000

AB The invention provides novel lithium-containing phosphate materials having a high proportion of lithium per formula unit of the material. Upon electrochem. interaction, such material deintercalates lithium ions, and is capable of reversibly cycling lithium ions. The invention provides a rechargeable lithium battery which comprises an electrode formed from the novel lithium-containing phosphates.

IT 294664-30-5 294664-39-4 294664-56-5
 294664-57-6 294664-59-8 294664-70-3
 294664-72-5

(rechargeable lithium battery with lithium-containing phosphate active materials)

RN 294664-30-5 HCAPLUS

CN Lithium vanadium phosphate phosphorofluoridate
 (Li₂5V₂(PO₄)₂5(PFO₃)_{0.5}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	0.5	15181-43-8
O4P	2.5	14265-44-2
V	2	7440-62-2
Li	2.5	7439-93-2

RN 294664-39-4 HCAPLUS

CN Lithium vanadium phosphate phosphorofluoridate (Li₂2V₂(PO₄)₂(PFO₃))
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	1	15181-43-8
O4P	2	14265-44-2
V	2	7440-62-2
Li	2	7439-93-2

RN 294664-56-5 HCAPLUS

CN Lithium manganese vanadium phosphate phosphorofluoridate
(Li_{2.5}MnV(PO₄)_{2.5}(PFO₃)_{0.5}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	0.5	15181-43-8
O4P	2.5	14265-44-2
V	1	7440-62-2
Mn	1	7439-96-5
Li	2.5	7439-93-2

RN 294664-57-6 HCAPLUS

CN Iron lithium vanadium phosphate phosphorofluoridate
(Fe_{1.5}Li₂V_{0.5}(PO₄)₂(PFO₃)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	1	15181-43-8
O4P	2	14265-44-2
V	0.5	7440-62-2
Li	2	7439-93-2
Fe	1.5	7439-89-6

RN 294664-59-8 HCAPLUS

CN Lithium vanadium phosphate phosphorofluoridate
(Li₃V₂(PO₄)_{2.5}(PFO₃)_{0.5}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	0.5	15181-43-8
O4P	2.5	14265-44-2
V	2	7440-62-2
Li	3	7439-93-2

RN 294664-70-3 HCAPLUS

CN Lithium vanadium phosphate phosphorofluoridate (Li₃V₂(PO₄)₂(PFO₃))
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	1	15181-43-8
O4P	2	14265-44-2
V	2	7440-62-2
Li	3	7439-93-2

RN 294664-72-5 HCAPLUS

CN Lithium manganese vanadium phosphate phosphorofluoridate
(Li₃Mn_{0.5}V_{1.5}(PO₄)_{2.5}(PFO₃)_{0.5}) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
FO3P	0.5	15181-43-8
O4P	2.5	14265-44-2
V	1.5	7440-62-2

Mn		0.5		7439-96-5
Li		3		7439-93-2

IC ICM H01M004-58
ICS H01M004-48; C01B025-30
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT 294664-30-5 294664-39-1 294664-56-5
294664-57-6 294664-59-8 294664-70-3
294664-72-5
(rechargeable lithium battery with lithium-containing phosphate active materials)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 37 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2000:456288 HCAPLUS [Full-text](#)
DOCUMENT NUMBER: 133:216938
TITLE: CO2 gas sensor using lithium ionic conductor with inside heater
AUTHOR(S): Seo, M.-G.; Kang, B.-H.; Chai, Y.-S.; Song, K.-D.; Lee, D.-D.
CORPORATE SOURCE: Department of Electronic Engineering, Kyungpook National University, Taegu, 702-701, S. Korea
SOURCE: Sensors and Actuators, B: Chemical (2000), B65(1-3), 346-348
CODEN: SABCEB; ISSN: 0925-4005
PUBLISHER: Elsevier Science S.A.
DOCUMENT TYPE: Journal
LANGUAGE: English
ED Entered STN: 07 Jul 2000

AB The raw material for Li ionic conductor ($\text{Li}_{1+x}\text{Zr}_2\text{SixP}_3\text{-xO}_{12}$, where x is .apprx.2) was synthesized by sol-gel method. Eutectic mixture ($\text{Li}_2\text{CO}_3\text{:K}_2\text{CO}_3\text{:Na}_2\text{CO}_3 = 47.0\text{:}25.6\text{:}27.4$ weight %) was formed on the sensing electrode as an auxiliary material. For the wide range of CO2 concentration from 1000 to 10,000 ppm, the electromotive force examined at 420° showed excellent agreement with theor. value of a Nernst's equation. The 90% response time was as short as 15-20 s. In 40-90% relative humidity, the electromotive force slope of sensor for CO2 gas was 64-67 mV/decade. The long-term stability of the sensor was studied for 60 days.
IT 81295-89-8D, Lithium zirconium phosphate silicate ($\text{Li}_3\text{Zr}_2(\text{PO}_4)(\text{SiO}_4)_2$), nonstoichiometric (CO2 gas sensor using lithium ionic conductor with inside heater)
RN 81295-89-8 HCAPLUS
CN Lithium zirconium phosphate silicate ($\text{Li}_3\text{Zr}_2(\text{PO}_4)(\text{SiO}_4)_2$) (CA INDEX NAME)

Component		Ratio		Component
				Registry Number
O4Si		2		17181-37-2
O4P		1		14265-44-2
Zr		2		7440-67-7
Li		3		7439-93-2

CC 79-2 (Inorganic Analytical Chemistry)
Section cross-reference(s): 72, 76
IT 81295-89-8D, Lithium zirconium phosphate silicate ($\text{Li}_3\text{Zr}_2(\text{PO}_4)(\text{SiO}_4)_2$), nonstoichiometric

(CO2 gas sensor using lithium ionic conductor with inside heater)
 REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L25 ANSWER 38 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
 ACCESSION NUMBER: 2000:368796 HCAPLUS Full-text
 DOCUMENT NUMBER: 133:7071
 TITLE: Lithium based phosphates for use in lithium ion
 batteries and method of preparation
 INVENTOR(S): Barker, Jeremy; Saidi, M. Yazid
 PATENT ASSIGNEE(S): Valence Technology, Inc., USA
 SOURCE: PCT Int. Appl., 69 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000031812	A1	20000602	WO 1999-US23074	19991005
<--				
WO 2000031812	A9	20020822		
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6447951	B1	20020910	US 1998-195961	19981119
<--				
CA 2351332	A1	20000602	CA 1999-2351332	19991005
<--				
AU 9965076	A	20000613	AU 1999-65076	19991005
<--				
AU 764529	B2	20030821		
EP 1135819	A1	20010926	EP 1999-953046	19991005
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
JP 2002530835	T	20020917	JP 2000-584544	19991005
<--				
MX 2001PA04931	A	20040129	MX 2001-PA4931	20010516
<--				
PRIORITY APPLN. INFO.:			US 1998-195961	A1 19981119
			<--	
			US 1996-717919	A2 19960923
			<--	
			WO 1999-US23074	W 19991005
			<--	
ED	Entered STN: 04 Jun 2000			
AB	A Li ion battery comprises a first electrode having an active material in a first condition of the nominal general formula $\text{Li3-xM'yM''2-y(PO4)3}$, $x = 0, y$ $0-2$, and in a second condition of the nominal general formula $\text{Li3-xM'yM''2-y(PO4)3}$, $x = 0-3$; M' is a transition metal and M' is a nontransition metal selected from the group consisting of metals and metalloids; a second			

electrode which is a counter electrode to the first electrode; and an electrolyte between the electrodes.

IT 204653-32-7, Aluminum lithiumvanadium phosphate $\text{AlLi}_3\text{V}(\text{PO}_4)_3$
(lithium based phosphates for use in lithium ion batteries and
method of preparation)
RN 204653-32-7 HCAPLUS
CN Aluminum lithium vanadium phosphate ($\text{AlLi}_3\text{V}(\text{PO}_4)_3$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Al	1	7429-90-5

IC ICM H01M004-58
ICS H01M010-40; C01B025-45
CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate
7782-42-5, Graphite, uses 21324-40-3, Lithium hexafluorophosphate
84159-18-2, Lithium vanadium phosphate $\text{Li}_3\text{V}_2(\text{PO}_4)_3$ 204653-32-7
, Aluminum lithiumvanadium phosphate $\text{AlLi}_3\text{V}(\text{PO}_4)_3$ 270258-22-5
(lithium based phosphates for use in lithium ion batteries and
method of preparation)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L25 ANSWER 39 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN
ACCESSION NUMBER: 2000:197818 HCAPLUS Full-text
DOCUMENT NUMBER: 132:224820
TITLE: Lithium vanadium phosphate composite compound and
its use as positive electrode for lithium ion
secondary battery
INVENTOR(S): Sato, Mineo; Toda, Kenji; Imanaka, Nobuto
PATENT ASSIGNEE(S): Osaka University, Japan
SOURCE: Jpn. Kokai Tokyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000086215	A	20000328	JP 1998-261930	19980916
			<--	
JP 2949229	B2	19990913		
PRIORITY APPLN. INFO.:			JP 1998-261930	19980916
			<--	

ED Entered STN: 28 Mar 2000

AB Lithium vanadium phosphate composite compds. have the following formula
 $\text{Li}_y(\text{V}_1-\text{xM}_\text{x})_2(\text{PO}_4)_3$ where M is selected from aluminum, titanium and zirconium,
 $0 < \text{x} \leq 0.2$, and y is 3 when M is aluminum and or y is $3-2\text{x}$ when M is titanium or
zirconium. The composite compound which possesses excellent charge-discharge
behavior can be used as the pos. electrode for the lithium ion secondary
battery.

IT 204653-32-9, Aluminum lithium vanadium phosphate

(Al₀-0.2Li₃V_{0.8}-1(P₀₄)₃) 261515-94-0, Lithium titanium vanadium phosphate (Li_{2.6}-3Ti₀-0.2V_{0.8}-1(P₀₄)₃) 261515-95-1, Lithium vanadium zirconium phosphate (Li_{2.6}-3V_{0.8}-1Zr₀-0.2(P₀₄)₃) (lithium vanadium phosphate composite compound and its use as pos. electrode for lithium ion secondary battery)

RN 261515-93-9 HCAPLUS

CN Aluminum lithium vanadium phosphate (Al₀-0.2Li₃V_{0.8}-1(P₀₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	0.8 - 1	7440-62-2
Li	3	7439-93-2
Al	0 - 0.2	7429-90-5

RN 261515-94-0 HCAPLUS

CN Lithium titanium vanadium phosphate (Li_{2.6}-3Ti₀-0.2V_{0.8}-1(P₀₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	0.8 - 1	7440-62-2
Ti	0 - 0.2	7440-32-6
Li	2.6 - 3	7439-93-2

RN 261515-95-1 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li_{2.6}-3V_{0.8}-1Zr₀-0.2(P₀₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0 - 0.2	7440-67-7
V	0.8 - 1	7440-62-2
Li	2.6 - 3	7439-93-2

IC ICM C01B025-45

ICS H01M004-02; H01M004-58; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 261515-93-9, Aluminum lithium vanadium phosphate (Al₀-0.2Li₃V_{0.8}-1(P₀₄)₃) 261515-94-0, Lithium titanium vanadium phosphate (Li_{2.6}-3Ti₀-0.2V_{0.8}-1(P₀₄)₃) 261515-95-1, Lithium vanadium zirconium phosphate (Li_{2.6}-3V_{0.8}-1Zr₀-0.2(P₀₄)₃) (lithium vanadium phosphate composite compound and its use as pos. electrode for lithium ion secondary battery)

L25 ANSWER 40 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:15552 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 132:52431

TITLE: Method of preparation of lithium-containing silicophosphates for electrode active material of lithium batteries

INVENTOR(S): Barker, Jeremy

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: PCT Int. Appl., 46 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000001024	A1	20000106	WO 1999-US11217	19990520
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6136472	A	20001024	US 1998-105748	19980626
CA 2333577	A1	20000106	CA 1999-2333577	19990520
AU 9940918	A	20000117	AU 1999-40918	19990520
EP 1090435	A1	20010411	EP 1999-924410	19990520
EP 1090435	B1	20040804		
R: DE, ES, FR, GB, IT, IE				
JP 2002519836	T	20020702	JP 2000-557507	19990520
EP 1282181	A2	20030205	EP 2002-25070	19990520
EP 1282181	A3	20050330		
R: DE, ES, FR, GB, IT, IE				
HK 1036883	A1	20050429	HK 2001-105569	20010810
PRIORITY APPLN. INFO.:			US 1998-105748	A1 19980626
			EP 1999-924410	A3 19990520
			WO 1999-US11217	W 19990520
ED	Entered STN: 07 Jan 2000			
AB	The invention provides a new electrode active material and cells and batteries which utilize such active material. The active material is represented by the nominal general formula $\text{Li}a\text{M}'(2-b)\text{M}''\text{bSicP}(3-c)\text{O}_{12}$, $0 \leq b \leq 2$, $0 < c < 3$. M' and M'' are each elements selected from the group consisting of metal and metalloids elements. The value of the variable a depends upon the selection of M' and M'' and on the relative proportions designated as b and c.			
IT	252943-44-5, Lithium vanadium phosphate silicate ($\text{Li}_3\text{V}_2(\text{PO}_4)_2(\text{SiO}_4)$) 252943-46-7 252943-47-8 252943-48-9 252943-49-0 252943-50-3, Lithium vanadium phosphate silicate ($\text{Li}_{3.5}\text{V}_2(\text{PO}_4)_2.5(\text{SiO}_4)0.5$) 252943-51-4 (method of preparation of lithium-containing silicophosphates for electrode active material of lithium batteries)			
RN	252943-44-5 HCAPLUS			
CN	Lithium vanadium phosphate silicate ($\text{Li}_3\text{V}_2(\text{PO}_4)_2(\text{SiO}_4)$) (CA INDEX NAME)			

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
O4P	2	14265-44-2
V	2	7440-62-2
Li	3	7439-93-2

RN 252943-46-7 HCAPLUS

CN Lithium manganese vanadium phosphate silicate (Li3MnV(PO4)2(SiO4))
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
O4P	2	14265-44-2
V	1	7440-62-2
Mn	1	7439-96-5
Li	3	7439-93-2

RN 252943-47-8 HCAPLUS

CN Lithium titanium vanadium phosphate silicate (Li3TiV(PO4)2(SiO4)) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
O4P	2	14265-44-2
V	1	7440-62-2
Ti	1	7440-32-6
Li	3	7439-93-2

RN 252943-48-9 HCAPLUS

CN Chromium lithium titanium phosphate silicate (CrLi3Ti(PO4)2(SiO4))
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	1	17181-37-2
O4P	2	14265-44-2
Cr	1	7440-47-3
Ti	1	7440-32-6
Li	3	7439-93-2

RN 252943-49-0 HCAPLUS

CN Aluminum lithium vanadium phosphate silicate
(AlLi3.5V(PO4)2.5(SiO4)0.5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.5	17181-37-2
O4P	2.5	14265-44-2
V	1	7440-62-2
Li	3.5	7439-93-2
Al	1	7429-90-5

RN 252943-50-3 HCAPLUS
 CN Lithium vanadium phosphate silicate (Li3.5V2(PO4)2.5(SiO4)0.5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.5	17181-37-2
O4P	2.5	14265-44-2
V	2	7440-62-2
Li	3.5	7439-93-2

RN 252943-51-4 HCAPLUS
 CN Aluminum chromium lithium phosphate silicate
 (AlCrLi3.5(PO4)2.5(SiO4)0.5) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.5	17181-37-2
O4P	2.5	14265-44-2
Cr	1	7440-47-3
Li	3.5	7439-93-2
Al	1	7429-90-5

IC ICM H01M004-58
 ICS H01M010-40; C01B025-45
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT 252943-44-5, Lithium vanadium phosphate silicate
 (Li3V2(PO4)2(SiO4)) 252943-46-7 252943-47-8
 252943-48-9 252943-49-0 252943-50-3,
 Lithium vanadium phosphate silicate (Li3.5V2(PO4)2.5(SiO4)0.5)
 252943-51-4
 (method of preparation of lithium-containing silicophosphates for electrode active material of lithium batteries)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L25 ANSWER 41 OF 59 HCAPLUS COPYRIGHT 2008 ACS ON STN

ACCESSION NUMBER: 1999:661912 HCAPLUS Full-text

DOCUMENT NUMBER: 131:324968

TITLE: Improvement of discharge capacity of
 β -Fe2(SO4)3-type Li3V2(PO4)3 by stabilizing
 high temperature orthorhombic phase at room
 temperature

AUTHOR(S): Ohkawa, Hirokazu; Yoshida, Kenji; Saito, Mai;
 Uematsu, Kazuyoshi; Toda, Kenji; Sato, Mineo

CORPORATE SOURCE: Department of Chemistry and Chemical Engineering,
 Faculty of Engineering, Niigata University,
 Niigata, 950-2181, Japan

SOURCE: Chemistry Letters (1999), (10),
 1017-1018

CODEN: CMLTAG; ISSN: 0366-7022

PUBLISHER: Chemical Society of Japan

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 18 Oct 1999

AB The cathode performance of a lithium ion battery was investigated for β -Fe₂(SO₄)₃-type Li₃V₂(PO₄)₃ and Li₃(V_{1-x}Zr_x)₂(PO₄)₃ ($x=0.05, 0.1, 0.15, 0.2$). On TG-DTA measurements, Li₃V₂(PO₄)₃ exhibited two types of phase transition, while Li₃(V_{1-x}Zr_x)₂(PO₄)₃ exhibited no phase transition. Powder X-ray diffraction anal. and conductivity measurements confirmed an evidence for the stabilization of the high temperature phase at room temperature. The discharge capacity of the Zr-substituted Li₃(V_{1-x}Zr_x)₂(PO₄)₃ samples became much larger than that of the pure Li₃V₂(PO₄)₃ sample.

IT 248263-63-0, Lithium vanadium zirconium phosphate (Li₃V_{1.9}Zr_{0.1}(PO₄)₃) 248263-64-1, Lithium vanadium zirconium phosphate (Li₃V_{1.8}Zr_{0.2}(PO₄)₃) 248263-65-2, Lithium vanadium zirconium phosphate (Li₃V_{1.7}Zr_{0.3}(PO₄)₃) 248263-66-3, Lithium vanadium zirconium phosphate (Li₃V_{1.6}Zr_{0.4}(PO₄)₃) (improvement of discharge capacity of β -Fe₂(SO₄)₃-type Li₃V₂(PO₄)₃ by stabilizing high temperature orthorhombic phase at room temperature)

RN 248263-63-0 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li₃V_{1.9}Zr_{0.1}(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.1	7440-67-7
V	1.9	7440-62-2
Li	3	7439-93-2

RN 248263-64-1 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li₃V_{1.8}Zr_{0.2}(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.2	7440-67-7
V	1.8	7440-62-2
Li	3	7439-93-2

RN 248263-65-2 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li₃V_{1.7}Zr_{0.3}(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.3	7440-67-7
V	1.7	7440-62-2
Li	3	7439-93-2

RN 248263-66-3 HCAPLUS

CN Lithium vanadium zirconium phosphate (Li₃V_{1.6}Zr_{0.4}(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2

Zr		0.4		7440-67-7
V		1.6		7440-62-2
Li		3		7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 84159-18-2, Lithium vanadium phosphate $\text{Li}_3\text{V}_2(\text{PO}_4)_3$ 248263-63-0, Lithium vanadium zirconium phosphate ($\text{Li}_3\text{V}_1.9\text{Zr}_0.1(\text{PO}_4)_3$) 248263-64-1, Lithium vanadium zirconium phosphate ($\text{Li}_3\text{V}_1.8\text{Zr}_0.2(\text{PO}_4)_3$) 248263-65-2, Lithium vanadium zirconium phosphate ($\text{Li}_3\text{V}_1.7\text{Zr}_0.3(\text{PO}_4)_3$) 248263-66-3, Lithium vanadium zirconium phosphate ($\text{Li}_3\text{V}_1.6\text{Zr}_0.4(\text{PO}_4)_3$) (improvement of discharge capacity of $\beta\text{-Fe}_2(\text{SO}_4)_3$ -type $\text{Li}_3\text{V}_2(\text{PO}_4)_3$ by stabilizing high temperature orthorhombic phase at room temperature)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 42 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1999:329765 HCAPLUS Full-text

DOCUMENT NUMBER: 131:62048

TITLE: Effect of the ion substitution on the ionic conductivity of solid electrolytes based on lithium titanium phosphate

AUTHOR(S): Kang, Eun-Tae; Wee, Hong-Bok; Kwon, Young-Jean
CORPORATE SOURCE: Department of Inorganic Materials Engineering, Gyeongsang National University, Gyeongnam, 660-701, S. Korea

SOURCE: Yoo Hakhoechi (1999), 36(4), 380-390
CODEN: YPHJAP; ISSN: 0372-7807

PUBLISHER: Korean Ceramic Society

DOCUMENT TYPE: Journal

LANGUAGE: Korean

ED Entered STN: 28 May 1999

AB $\text{Li}_{1+x}\text{Ti}_2\text{Si}_x\text{P}_3\text{-xO}_{12}$, $\text{Li}_{1+2x}\text{Ti}_2\text{Al}_x\text{P}_3\text{-xO}_{12}$, and $\text{Li}_{1+x}\text{Ti}_2\text{-xAl}_x(\text{PO}_4)_3$ ($0 \leq x \leq 0.5$) were synthesized, and the structure, the d. and the ionic conductivity of samples were investigated. The main structure was a $\text{LiTi}_2(\text{PO}_4)_3$ (S.G: R-3CH) phase over all systems, except for $\text{Li}_{1+2x}\text{Ti}_2\text{Al}_x\text{P}_3\text{-xO}_{12}$ system in the range of $x \geq 0.4$ which had LiTiPO_5 (S.G: Pnma) as a main phase. The d. and the conductivity of samples increased with increasing x, but decreased by the precipitation of the second phase. Consequently the ionic conductivity of these system could be increased by increasing the d. and decreased by precipitating the second phases. The highest ionic conductivity of $1.29 + 10^{-3} \text{ Scm}^{-1}$ at 25°C was obtained in $\text{Li}_{1.3}\text{Ti}_2\text{Si}_{0.3}\text{P}_2.7\text{O}_{12}$.

IT 228266-12-4 (solid electrolytes; effects of Al and Si ion substitution on the ionic conductivity of lithium titanium phosphate solid electrolytes)

RN 228266-12-4 HCAPLUS

CN Aluminum lithium titanium oxide phosphate ($\text{Al}_{0.5}\text{Li}_2\text{Ti}_2\text{O}_{12}(\text{PO}_4)_2.5$) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O	2	17778-80-2
O4P	2.5	14265-44-2
Ti	2	7440-32-6
Li	2	7439-93-2

Al | 0.5 | 7429-90-5

CC 57-2 (Ceramics)

Section cross-reference(s): 52

IT 30622-39-0, Lithium titanium phosphate LiTi₂(PO₄)₃ 120479-61-0,
Aluminum lithium titanium phosphate Al_{0.3}Li_{1.3}Ti_{1.7}(PO₄)₃
127660-09-7, Lithium titanium phosphate silicate
(Li_{1.4}Ti₂(PO₄)_{2.6}(SiO₄)_{0.4}) 127660-10-0, Lithium phosphorus silicon
titanium oxide Li_{1.3}P_{2.7}Si_{0.3}Ti₂O₁₂ 127660-11-1, Lithium titanium
phosphate silicate (Li_{1.2}Ti₂(PO₄)_{2.8}(SiO₄)_{0.2}) 127672-84-8, Lithium
titanium phosphate silicate (Li_{1.5}Ti₂(PO₄)_{2.5}(SiO₄)_{0.5}) 131266-83-6,
Aluminum lithium titanium phosphate Al_{0.5}Li_{1.5}Ti_{1.5}(PO₄)₃
138198-90-0, Lithium titanium oxide phosphate LiTiO(PO₄)
159157-31-0, Aluminum lithium titanium phosphate Al_{0.4}Li_{1.4}Ti_{1.6}(PO₄)₃
163119-08-2, Aluminum lithium titanium phosphate Al_{0.2}Li_{1.2}Ti_{1.8}(PO₄)₃
214119-31-0, Aluminum lithium titanium phosphate Al_{0.1}Li_{1.1}Ti_{1.9}(PO₄)₃
228266-07-7, Lithium titanium phosphate silicate
(Li_{1.1}Ti₂(PO₄)_{2.9}(SiO₄)_{0.1}) 228266-08-8 228266-09-9 228266-10-2
228266-11-3 228266-12-4

(solid electrolytes; effects of Al and Si ion substitution on the

ionic conductivity of lithium titanium phosphate solid electrolytes)

REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L25 ANSWER 43 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:509379 HCAPLUS Full-text

DOCUMENT NUMBER: 129:191547

ORIGINAL REFERENCE NO.: 129:38873a,38876a

TITLE: Nonaqueous-electrolyte lithium secondary battery
having high discharge capacity

INVENTOR(S): Nagata, Mikito; Karril, Amin; Tsukamoto, Kotobuki

PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10208730	A	19980807	JP 1997-25985	19970124

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PRIORITY APPLN. INFO.: JP 1997-25985 19970124

<--

ED Entered STN: 17 Aug 1998

AB In the title battery, cathode contains a Li-containing metal oxide as an active mass and another substance having Li⁺-discharging potential higher than that of the metal oxide and of amount corresponding to an amount of Li⁺ consumed in the initial charging. Preferably, the substance is selected from Li_{1+x}Mn₂O₄ (X = 0-1), Li₂NiO₂, Li₂Mn₂-xMxO₄ (M = Co, Ni, Zn, Mg, Fe; X = 0-2), Li₂Mn_{1.5}Ni_{0.5}O₄, Li₂VO₃ (X = 1-6), Li₃Fe₂(PO₄)₃, Li₃Fe₂(SO₄)₃, Li₃FeV(PO₄)₃, and Li₃V(PO₄)₃. Anode in the battery may be selected from graphite, coke, (amorphous) carbon, SnO, SnO₂, Sn_{1-x}MxO (M = Hg, P, B, Si, Ge, Sb; 0 ≤ X < 1), Sn_{1-x}MxO₂ (M = Hg, P, B, Si, Ge, Sb; 0 ≤ X < 1), Sn₃O₂(OH)₂, Sn_{3-x}MxO₂(OH)₂ (M = Mg, P, B, Si, Ge, Sb, As, Mn; 0 ≤ X < 3), LiSiO₂, SiO₂, and LiSnO₂. Lack of Li⁺ consumed in formation of a surficial film on the anode and Li⁺ trapped in the anode both occurring in the initial charging is supplemented by the substance.

IT 186131-68-0, Iron lithium vanadium phosphate (FeLi3V(PO4)3)
 211753-59-2, Lithium vanadium phosphate (Li3V(PO4)3)
 (lithium ion supplier in cathode; Li secondary batteries with
 cathodes containing Li metal oxide and Li+ supplier additives)
 RN 186131-68-0 HCAPLUS
 CN Iron lithium vanadium phosphate (FeLi3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Fe	1	7439-89-6

RN 211753-59-2 HCAPLUS
 CN Lithium vanadium phosphate (Li3V(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2

IC ICM H01M004-02
 ICS H01M004-58; H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)
 IT 12057-17-9, Lithium manganese oxide (LiMn2O4) 12162-79-7, Lithium
 manganese oxide (LiMnO2) 12325-84-7, Lithium nickel oxide (Li2NiO2)
 36058-25-0, Lithium iron phosphate [Li3Fe2(PO4)3] 123550-86-7,
 Lithium manganese oxide (Li0.5-1MnO2) 186131-68-0, Iron
 lithium vanadium phosphate (FeLi3V(PO4)3) 200938-46-1, Lithium
 manganese nickel oxide (Li2Mn1.5Ni0.5O4) 211753-57-0, Lithium
 vanadium oxide (Li1-6VO3) 211753-58-1, Iron lithium sulfate
 (Fe2Li3(SO4)3) 211753-59-2, Lithium vanadium phosphate
 (Li3V(PO4)3)
 (lithium ion supplier in cathode; Li secondary batteries with
 cathodes containing Li metal oxide and Li+ supplier additives)

L25 ANSWER 44 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:404670 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 129:97673

ORIGINAL REFERENCE NO.: 129:20091a,20094a

TITLE: Characteristics of 3D framework cathodes with
 (XO4)n- polyanions

AUTHOR(S): Okada, S.; Arai, H.; Asakura, K.; Sakurai, Y.;
 Yamaki, J.; Nanjundaswamy, K. S.; Padhi, A. K.;
 Masquelier, C.; Goodenough, J. B.

CORPORATE SOURCE: NTT Integrated Information and Energy Systems
 Laboratories, Ibaraki, 319-11, Japan
 SOURCE: Progress in Batteries & Battery Materials (
 1997), 16, 302-308

CODEN: PBBMEF; ISSN: 1099-4467

PUBLISHER: ITE-JEC Press Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 02 Jul 1998

AB In an effort to identify alternate NASICON related framework hosts for Li intercalation, we have investigated the synthesis and electrochem. characterization of 3 inexpensive, environmentally benign phosphates containing Fe and V, viz. $\text{Li}_3\text{Fe}_2(\text{PO}_4)_3$, $\text{Li}_3\text{V}_2(\text{PO}_4)_3$, and $\text{Li}_3\text{FeV}(\text{PO}_4)_3$. The compds. are synthesized by a one-step solid state reaction. The redox voltages V_4/V_3 and Fe_3/Fe_2 in these compds. are tech. attractive for Li rechargeable battery applications. Moreover, the octahedral-site redox couples V_4/V_3 and V_3/V_2 are separated by 2.0 V, and both the Fe_3/Fe_2 and V_3/V_2 redox voltages get reduced by 0.8 V on going from the sulfate to the phosphate polyanion.

IT 186131-68-0, Iron lithium vanadiumphosphate $\text{FeLi}_3\text{V}(\text{PO}_4)_3$
(characteristics of 3D framework cathodes with $(\text{XO}_4)_n^-$ polyanions)

RN 186131-68-0 HCAPLUS

CN Iron lithium vanadium phosphate ($\text{FeLi}_3\text{V}(\text{PO}_4)_3$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Fe	1	7439-89-6

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 36058-25-0, Iron lithium phosphate $\text{Fe}_2\text{Li}_3(\text{PO}_4)_3$ 84159-18-2, Lithium vanadium phosphate $\text{Li}_3\text{V}_2(\text{PO}_4)_3$ 186131-68-0, Iron lithium vanadiumphosphate $\text{FeLi}_3\text{V}(\text{PO}_4)_3$

(characteristics of 3D framework cathodes with $(\text{XO}_4)_n^-$ polyanions)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 45 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:221666 HCAPLUS Full-text

DOCUMENT NUMBER: 129:20826

ORIGINAL REFERENCE NO.: 129:4335a,4338a

TITLE: New cathode materials for rechargeable lithium batteries: the 3-D framework structures $\text{Li}_3\text{Fe}_2(\text{XO}_4)_3$ ($\text{X} = \text{P}, \text{As}$)

AUTHOR(S): Masquelier, C.; Padhi, A. K.; Nanjundaswamy, K. S.; Goodenough, J. B.

CORPORATE SOURCE: Center for Materials Science and Engineering, University of Texas at Austin, Austin, TX, 78712-1063, USA

SOURCE: Journal of Solid State Chemistry (1996), 135(2), 228-234

CODEN: JSSCBI; ISSN: 0022-4596

PUBLISHER: Academic Press

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 22 Apr 1998

AB Electrochem. insertion of lithium into four $\text{Li}_3\text{Fe}_2(\text{XO}_4)_3$ polymorphs ($\text{X} = \text{P}$ or As) with 3-D framework structures was carried out in " Li/LiClO_4 (PC:DME)/cathode" coin cells. Approx. 2 Li per formula unit could be reversibly inserted into the three different structures, which corresponds to the reduction of all Fe_3 to Fe_2 between 2.5 and 3.5 V vs lithium. The position of the Fe_3/Fe_2 redox couple below the lithium-anode Fermi energy is nearly independent of the structure and of whether $\text{X} = \text{P}$ or As . There is, however, a clear dependence of (i) the shape of the V_{cc} vs x curves for

Li3+xFe2(XO4)3 and (ii) the charge-discharge rate capabilities on the crystal structure of the cathode material.

IT 198782-41-1, Iron lithium phosphate (Fe2Li3-5(PO4)3)
(new cathode materials for rechargeable lithium batteries: 3-D
framework structures Li3Fe2(XO4)3 (X = P, As))

RN 198782-41-1 HCAPLUS

CN Iron lithium phosphate (Fe2Li3-5(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Li	3 - 5	7439-93-2
Fe	2	7439-89-6

CC 72-2 (Electrochemistry)

Section cross-reference(s): 52, 56

IT 198782-41-1, Iron lithium phosphate (Fe2Li3-5(PO4)3)
(new cathode materials for rechargeable lithium batteries: 3-D
framework structures Li3Fe2(XO4)3 (X = P, As))

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE
RE FORMAT

L25 ANSWER 46 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1998:197714 HCAPLUS Full-text

DOCUMENT NUMBER: 128:232794

ORIGINAL REFERENCE NO.: 128:46045a,46048a

TITLE: Lithium-containing, lithium-intercalating
phosphates and their use as electrode material in
secondary lithium-ion battery

INVENTOR(S): Barker, Jeremy; Saidi, Mohamed-Yazid

PATENT ASSIGNEE(S): Valence Technology, Inc., USA

SOURCE: PCT Int. Appl., 42 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9812761	A1	19980326	WO 1997-US15544	19970904
<--				
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ,				
DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP,				
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX,				
NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR,				
TT, UA, UG, US, UZ, VN, YU, ZW				
RW: GH, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, DE, DK, ES, FI,				
FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI,				
CM, GA, GN, ML, MR, NE, SN, TD, TG				
US 5871866	A	19990216	US 1996-717979	19960923
<--				
CA 2266365	A1	19980326	CA 1997-2266365	19970904
<--				
AU 9744102	A	19980414	AU 1997-44102	19970904
<--				
EP 931361	A1	19990728	EP 1997-942393	19970904
<--				

EP 931361 B1 20011205
 R: DE, ES, FR, GB, IT, IE
 JP 2001500665 T 20010116 JP 1998-514693 19970904
 <--
 EP 1093174 A1 20010418 EP 2001-200220 19970904
 <--
 EP 1093174 B1 20031217
 R: DE, ES, FR, GB, IT, IE
 ES 2169425 T3 20020701 ES 1997-942393 19970904
 <--
 EP 1403945 A1 20040331 EP 2003-25462 19970904
 <--
 EP 1403945 B1 20060301
 R: DE, ES, FR, GB, IT, IE
 ES 2258196 T3 20060816 ES 2003-25462 19970904
 <--
 KR 2000036230 A 20000626 KR 1999-702302 19990318
 <--
 HK 1023850 A1 20020823 HK 2000-100559 20000128
 <--
 US 20010021472 A1 20010913 US 2001-776843 20010205
 <--
 US 6720110 B2 20040413
 PRIORITY APPLN. INFO.: US 1996-717979 A1 19960923
 <--
 EP 1997-942393 A3 19970904
 <--
 WO 1997-US15544 W 19970904
 <--
 US 1998-204944 A1 19981203
 <--
 EP 2001-200220 A3 20010123
 <--

ED Entered STN: 06 Apr 1998

AB The phosphates comprise $\text{Li}(3-x)\text{MM}'(\text{PO}_4)_3$, where in the 1st condition $x = 0$, at least 1 of M and M' is a metal, and M and M' are the same or different from one another; and in the 2nd condition $0 < x \leq 3$ and at least 1 of M and M' has an oxidation state higher than its oxidation state in the 1st condition P compound. One of M and M' is selected from Mg, Ca, Cu, Co, Fe, Ni, Mo, V, Cr, Mn, and Ti. The phosphates comprise $\text{Li}_3\text{V}_2(\text{PO}_4)_3$, $\text{Li}_3\text{VTi}(\text{PO}_4)_3$, $\text{Li}_3\text{Fe}_2(\text{PO}_4)_3$, and $\text{Li}_3\text{FeV}(\text{PO}_4)_3$.

IT 186131-68-0, Iron lithium vanadium phosphate ($\text{FeLi}_3\text{V}(\text{PO}_4)_3$)
 204653-31-6, Lithium titanium vanadium phosphate
 ($\text{Li}_3\text{TiV}(\text{PO}_4)_3$) 204653-32-7, Aluminum lithium vanadium
 phosphate ($\text{AlLi}_3\text{V}(\text{PO}_4)_3$) 204653-33-8, Chromium lithium
 potassium phosphate ($\text{CrLi}_3\text{K}(\text{PO}_4)_3$) 204653-34-9, Lithium
 molybdenum potassium phosphate ($\text{Li}_3\text{MoK}(\text{PO}_4)_3$)
 (electrode material for secondary lithium-ion battery)

RN 186131-68-0 HCAPLUS

CN Iron lithium vanadium phosphate ($\text{FeLi}_3\text{V}(\text{PO}_4)_3$) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====	=====	=====
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Fe	1	7439-89-6

RN 204653-31-6 HCAPLUS

CN Lithium titanium vanadium phosphate (Li3TiV(P04)3) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Ti	1	7440-32-6
Li	3	7439-93-2

RN 204653-32-7 HCAPLUS

CN Aluminum lithium vanadium phosphate (AlLi3V(P04)3) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Al	1	7429-90-5

RN 204653-33-8 HCAPLUS

CN Chromium lithium potassium phosphate (CrLi3K(P04)3) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4P	3	14265-44-2
Cr	1	7440-47-3
K	1	7440-09-7
Li	3	7439-93-2

RN 204653-34-9 HCAPLUS

CN Lithium molybdenum potassium phosphate (Li3MoK(P04)3) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4P	3	14265-44-2
K	1	7440-09-7
Mo	1	7439-98-7
Li	3	7439-93-2

IC ICM H01M004-58

ICS H01M004-52; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 36058-25-0, Iron lithium phosphate (Fe2Li3(P04)3) 186131-68-0
 , Iron lithium vanadium phosphate (FeLi3V(P04)3) 204653-31-6
 , Lithium titanium vanadium phosphate (Li3TiV(P04)3)
 204653-32-7, Aluminum lithium vanadium phosphate
 (AlLi3V(P04)3) 204653-33-8, Chromium lithium potassium
 phosphate (CrLi3K(P04)3) 204653-34-9, Lithium molybdenum
 potassium phosphate (Li3MoK(P04)3)
 (electrode material for secondary lithium-ion battery)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

ACCESSION NUMBER: 1998:32205 HCAPLUS Full-text
 DOCUMENT NUMBER: 128:90963
 ORIGINAL REFERENCE NO.: 128:17737a,17740a
 TITLE: Stabilization of superionic conduction phase in
 Li3Sc2(PO4)3
 AUTHOR(S): Suzuki, Takahito; Yoshida, Kenji; Uematsu,
 Kazuyoshi; Kodama, Tatsuya; Toda, Kenji; Ye,
 Zuo-Guang; Sato, Mineo
 CORPORATE SOURCE: Department of Active Material Chemistry, Niigata
 University, Niigata, 950-21, Japan
 SOURCE: Solid State Ionics (1997), 104(1,2),
 27-33
 CODEN: SSIOD3; ISSN: 0167-2738
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

ED Entered STN: 21 Jan 1998

AB Lithium superion conductors, Li3+2x(Sc1-xMgx)2(PO4)3, Li3-2x(Sc1-xMx)2(PO4)3
 (M = Ti, Zr, Sn, Hf) and Li3-4x(Sc1-xMx)2(PO4)3 (M = Nb, Ta) were prepared by
 a solid-state reaction. TG-DTA anal. indicated no phase transition in
 Li3+2x(Sc1-xMgx)2(PO4)3 and Li3-2x(Sc1-xMx)2(PO4)3 (M = Ti, Zr, Sn, Hf) with x
 higher than 0.05, and in Li3-4x(Sc1-xMx)2(PO4)3 (M = Nb, Ta) with x higher
 than 0.025. The room temperature ionic conductivity of Li3Sc2(PO4)3 has been
 increased by three orders of magnitude with the highest conductivity observed
 in Li3-2x(Sc1-xTi)2(PO4)3 with x = 0.20 and in Li3-2x(Sc1-xZr)2(PO4)3 with x
 = 0.10. It was ascribed to the stabilization of the high temperature
 superionic conduction phase and the introduction of vacancies on the Li+ sites
 by substituting Ti4+ or Zr4+ for Sc3+.

IT 190652-55-2, Lithium scandium zirconium phosphate
 Li2.8Sc1.8Zr0.2(PO4)3 201036-54-6, Lithium scandium titanium
 phosphate (Li2.95Sc1.95Ti0.05(PO4)3) 201036-55-7, Lithium
 scandium titanium phosphate (Li2.9Sc1.9Ti0.1(PO4)3)
 201036-56-8, Lithium scandium titanium phosphate
 (Li2.8Sc1.8Ti0.2(PO4)3) 201036-57-9, Lithium scandium
 titanium phosphate (Li2.6Sc1.6Ti0.4(PO4)3) 201036-58-0,
 Lithium scandium titanium phosphate (Li2.4Sc1.4Ti0.6(PO4)3)
 201036-63-7, Lithium niobium scandium phosphate
 (Li2.96Nb0.02Sc1.98(PO4)3) 201036-64-8, Lithium niobium
 scandium phosphate (Li2.9Nb0.05Sc1.95(PO4)3) 201036-67-1,
 Lithium scandium titanium phosphate (Li2.4Sc1.6Ti0.4(PO4)3)
 201036-68-2, Lithium niobium scandium phosphate
 (Li2.8Nb0.1Sc1.9(PO4)3) 201036-69-3, Lithium niobium
 scandium phosphate (Li2.7Nb0.15Sc1.85(PO4)3) 201036-70-6,
 Lithium niobium scandium phosphate (Li2.6Nb0.2Sc1.8(PO4)3)
 (stabilization of superionic conduction phase in Li3Sc2(PO4)3)
 RN 190652-55-2 HCAPLUS
 CN Lithium scandium zirconium phosphate (Li2.8Sc1.8Zr0.2(PO4)3) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Zr	0.2	7440-67-7
Sc	1.8	7440-20-2
Li	2.8	7439-93-2

RN 201036-54-6 HCAPLUS
 CN Lithium scandium titanium phosphate (Li2.95Sc1.95Ti0.05(PO4)3) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.05	7440-32-6
Sc	1.95	7440-20-2
Li	2.95	7439-93-2

RN 201036-55-7 HCAPLUS

CN Lithium scandium titanium phosphate (Li2.9Sc1.9Ti0.1(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.1	7440-32-6
Sc	1.9	7440-20-2
Li	2.9	7439-93-2

RN 201036-56-8 HCAPLUS

CN Lithium scandium titanium phosphate (Li2.8Sc1.8Ti0.2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.2	7440-32-6
Sc	1.8	7440-20-2
Li	2.8	7439-93-2

RN 201036-57-9 HCAPLUS

CN Lithium scandium titanium phosphate (Li2.6Sc1.6Ti0.4(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.4	7440-32-6
Sc	1.6	7440-20-2
Li	2.6	7439-93-2

RN 201036-58-0 HCAPLUS

CN Lithium scandium titanium phosphate (Li2.4Sc1.4Ti0.6(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.6	7440-32-6
Sc	1.4	7440-20-2
Li	2.4	7439-93-2

RN 201036-63-7 HCAPLUS

CN Lithium niobium scandium phosphate (Li2.96Nb0.02Sc1.98(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.98	7440-20-2
Nb	0.02	7440-03-1
Li	2.96	7439-93-2

RN 201036-64-8 HCAPLUS

CN Lithium niobium scandium phosphate (Li2.9Nb0.05Sc1.95(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.95	7440-20-2
Nb	0.05	7440-03-1
Li	2.9	7439-93-2

RN 201036-67-1 HCAPLUS

CN Lithium scandium titanium phosphate (Li2.4Sc1.6Ti0.4(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.4	7440-32-6
Sc	1.6	7440-20-2
Li	2.4	7439-93-2

RN 201036-68-2 HCAPLUS

CN Lithium niobium scandium phosphate (Li2.8Nb0.15Sc1.9(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.9	7440-20-2
Nb	0.1	7440-03-1
Li	2.8	7439-93-2

RN 201036-69-3 HCAPLUS

CN Lithium niobium scandium phosphate (Li2.7Nb0.15Sc1.85(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.85	7440-20-2
Nb	0.15	7440-03-1
Li	2.7	7439-93-2

RN 201036-70-6 HCAPLUS

CN Lithium niobium scandium phosphate (Li2.6Nb0.2Sc1.8(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Sc	1.8	7440-20-2
Nb	0.2	7440-03-1
Li	2.6	7439-93-2

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 76

IT 87796-15-4, Lithium scandium phosphate Li3Sc2(PO4)3
 190652-55-2, Lithium scandium zirconium phosphate
 Li2.8Sc1.8Zr0.2(PO4)3 201036-54-6, Lithium scandium titanium
 phosphate (Li2.95Sc1.95Ti0.05(PO4)3) 201036-55-7, Lithium
 scandium titanium phosphate (Li2.9Sc1.9Ti0.1(PO4)3)
 201036-56-8, Lithium scandium titanium phosphate
 (Li2.8Sc1.8Ti0.2(PO4)3) 201036-57-9, Lithium scandium
 titanium phosphate (Li2.6Sc1.6Ti0.4(PO4)3) 201036-58-0,
 Lithium scandium titanium phosphate (Li2.4Sc1.4Ti0.6(PO4)3)
 201036-59-1, Lithium magnesium scandium phosphate
 (Li3.05Mg0.05Sc2.95(PO4)) 201036-60-4, Lithium magnesium scandium
 phosphate (Li3.2Mg0.2Sc1.8(PO4)) 201036-63-7, Lithium
 niobium scandium phosphate (Li2.96Nb0.02Sc1.98(PO4)3)
 201036-64-8, Lithium niobium scandium phosphate
 (Li2.9Nb0.05Sc1.95(PO4)3) 201036-65-9, Lithium magnesium scandium
 phosphate (Li3.1Mg0.1Sc1.9(PO4)) 201036-66-0, Lithium magnesium
 scandium phosphate (Li3.3Mg0.3Sc1.7(PO4)) 201036-67-1,
 Lithium scandium titanium phosphate (Li2.4Sc1.6Ti0.4(PO4)3)
 201036-68-2, Lithium niobium scandium phosphate
 (Li2.8Nb0.1Sc1.9(PO4)3) 201036-69-3, Lithium niobium
 scandium phosphate (Li2.7Nb0.15Sc1.85(PO4)3) 201036-70-6,
 Lithium niobium scandium phosphate (Li2.6Nb0.2Sc1.8(PO4)3)
 (stabilization of superionic conduction phase in Li3Sc2(PO4)3)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN THE
 RE FORMAT

L25 ANSWER 48 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1997:718093 HCAPLUS Full-text

DOCUMENT NUMBER: 128:5716

ORIGINAL REFERENCE NO.: 128:1139a,1142a

TITLE: Cathode materials for secondary alkali metal-ion
 and lithium-ion batteries

INVENTOR(S): Goodenough, John B.; Padhi, Akshaya;

Nanjundaswamy, K. S.; Masquelier, Christian

PATENT ASSIGNEE(S): Board of Regents, the University of Texas System,
 USA

SOURCE: PCT Int. Appl., 47 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9740541	A1	19971030	WO 1997-US6671	19970423

<--

W: CA, JP

RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
PT, SE

CA 2251709	A1	19971030	CA 1997-2251709	19970423
			<--	
CA 2251709	C	20060801		
CA 2543784	A1	19971030	CA 1997-2543784	19970423
			<--	
EP 904607	A1	19990331	EP 1997-923437	19970423
			<--	
EP 904607	B1	20041027		
R: DE, FR, GB, IT				
JP 2000509193	T	20000718	JP 1997-538259	19970423
			<--	
EP 1501137	A2	20050126	EP 2004-22447	19970423
			<--	
EP 1501137	A3	20061025		
R: DE, FR, GB, IT				
EP 1755182	A1	20070221	EP 2006-20470	19970423
			<--	
R: DE, FR, GB, IT				
EP 1755183	A1	20070221	EP 2006-21083	19970423
			<--	
R: DE, FR, GB, IT				
JP 2007214147	A	20070823	JP 2007-128682	20070514
			<--	
JP 2007294463	A	20071108	JP 2007-128681	20070514
			<--	
PRIORITY APPLN. INFO.:			US 1996-16060P	P 19960423
			<--	
			US 1996-32346P	P 19961204
			<--	
			CA 1997-2251709	A3 19970423
			<--	
			EP 1997-923437	A3 19970423
			<--	
			EP 2004-22447	A3 19970423
			<--	
			JP 1997-538259	A3 19970423
			<--	
			WO 1997-US6671	W 19970423
			<--	
ED Entered STN: 13 Nov 1997				
AB The cathode materials are LiMPO_4 , where M is ≥ 1 1st-row transition-metal cation; Mn, Fe, Co, and/or Ni; or $\text{Fe}_1\text{-xMn}_x$ or $\text{Fe}_1\text{-xTi}_x$, where $0 < x < 1$. The cathode materials comprise a rhombohedral Nasicon material $\text{M}_1\text{xM}_2(\text{PO}_4)_3$, where M_1 is Li or Na and $x \leq 5$.				
IT 198782-41-1, Iron lithium phosphate ($\text{Fe}_2\text{Li}_3\text{-5}(\text{PO}_4)_3$)				
198782-42-2, Iron lithium phosphate sulfate				
($\text{Fe}_2\text{Li}_3\text{-3}(\text{PO}_4)(\text{SO}_4)_2$)				
(cathode materials for secondary lithium-ion batteries)				
RN 198782-41-1 HCAPLUS				
CN Iron lithium phosphate ($\text{Fe}_2\text{Li}_3\text{-5}(\text{PO}_4)_3$) (CA INDEX NAME)				

Component	Ratio	Component
		Registry Number
=====+	=====+	=====
04P	3	14265-44-2
Li	3 - 5	7439-93-2
Fe	2	7439-89-6

RN 198782-42-2 HCAPLUS
 CN Iron lithium phosphate sulfate (Fe₂Li₁₋₃(PO₄)(SO₄)₂) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4S	2	14808-79-8
O4P	1	14265-44-2
Li	1 - 3	7439-93-2
Fe	2	7439-89-6

IT 198782-44-4, Lithium niobium titanium phosphate
 (Li₀₋₂NbTi(PO₄)₃) 198782-45-5, Iron lithium niobium
 phosphate (FeLi₁₋₃Nb(PO₄)₃)
 (cathode materials for secondary lithium-ion batteries)

RN 198782-44-4 HCAPLUS
 CN Lithium niobium titanium phosphate (Li₀₋₂NbTi(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	1	7440-32-6
Nb	1	7440-03-1
Li	0 - 2	7439-93-2

RN 198782-45-5 HCAPLUS
 CN Iron lithium niobium phosphate (FeLi₁₋₃Nb(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Nb	1	7440-03-1
Li	1 - 3	7439-93-2
Fe	1	7439-89-6

IC ICM H01M004-58

ICS C01B025-26

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)

Section cross-reference(s): 49

IT 15365-14-7, Iron lithium phosphate (LiFePO₄) 198782-39-7, Iron
 lithium phosphate (FeLi₀₋₁(PO₄)) 198782-41-1, Iron lithium
 phosphate (Fe₂Li₃₋₅(PO₄)₃) 198782-42-2, Iron lithium
 phosphate sulfate (Fe₂Li₁₋₃(PO₄)(SO₄)₂) 951777-58-5, Lithium sodium
 vanadium phosphate (Li₂NaV₂(PO₄)₃)

(cathode materials for secondary lithium-ion batteries)

IT 11123-44-7 59205-70-8 198782-44-4, Lithium niobium
 titanium phosphate (Li₀₋₂NbTi(PO₄)₃) 198782-45-5, Iron
 lithium niobium phosphate (FeLi₁₋₃Nb(PO₄)₃)
 (cathode materials for secondary lithium-ion batteries)

L25 ANSWER 49 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1997:469779 HCAPLUS Full-text

DOCUMENT NUMBER: 127:97562

ORIGINAL REFERENCE NO.: 127:18749a,18752a

TITLE: Cathode active mass for lithium secondary
 batteries and the batteries

INVENTOR(S): Hikuma, Koichiro
 PATENT ASSIGNEE(S): Sony Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09171827	A	19970630	JP 1995-350114	19951221
JP 3319258	B2	20020826	<--	
PRIORITY APPLN. INFO.:			JP 1995-350114	19951221
			<--	

ED Entered STN: 26 Jul 1997

AB The cathode active mass is $\text{Li}_x\text{Fe}_2\text{P}_4$ ($0 < x \leq 1.0$). The batteries show stable discharge voltage.

IT 192194-51-7P, Iron lithium phosphate ($\text{Fe}_2\text{Li}_{1-2}(\text{PO}_4)$)
 (cathodes; Fe Li phosphate cathode active mass for Li secondary batteries)

RN 192194-51-7 HCAPLUS

CN Iron lithium phosphate ($\text{Fe}_2\text{Li}_{1-2}(\text{PO}_4)$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	1	14265-44-2
Li	1 - 2	7439-93-2
Fe	2	7439-89-6

IC ICM H01M004-58

ICS C01B025-45; H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 192194-49-3P, Iron lithium phosphate ($\text{Fe}_2\text{Li}(\text{PO}_4)$) 192194-51-7P
 , Iron lithium phosphate ($\text{Fe}_2\text{Li}_{1-2}(\text{PO}_4)$)
 (cathodes; Fe Li phosphate cathode active mass for Li secondary batteries)

L25 ANSWER 50 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1996:739822 HCAPLUS Full-text

DOCUMENT NUMBER: 126:123873

ORIGINAL REFERENCE NO.: 126:23831a,23834a

TITLE: Synthesis, redox potential evaluation and electrochemical characteristics of NASICON-related-3D framework compounds

AUTHOR(S): Nanjundaswamy, K. S.; Padhi, A. K.; Goodenough, J. B.; Okada, S.; Ohtsuka, H.; Arai, H.; Yamaki, J.

CORPORATE SOURCE: Center for Materials Science and Engineering, University of Texas at Austin, ETC 9.102, Austin, TX, USA

SOURCE: Solid State Ionics (1996), 92(1,2), 1-10

CODEN: SSIOD3; ISSN: 0167-2738

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 16 Dec 1996

- AB The framework compds. $M_2(SO_4)_3$ with $M = (Ti\ Fe)$, $(V\ Fe)$, Fe and $Li_xM_2(PO_4)_3$ with $M = Ti$, $(V\ Fe)$, Fe were synthesized and electrochem. characterized by the coin-cell method. Use of larger $(XO_4)_n^-$ polyanions not only allows fast Li^+ -ion conduction in an open 3-dimensional framework that is selective for the working alkali ion on discharge; it also stabilizes operative redox potentials Fe^{3+}/Fe^{2+} , Ti^{4+}/Ti^{3+} , and V^{3+}/V^{2+} that give open-circuit voltages $V_{oc} > 2.5\ V$ as well as access to V^{4+}/V^{3+} , Ti^{3+}/Ti^{2+} , and Fe^{2+}/Fe^+ couples. Sepns. of the V^{4+}/V^{3+} and V^{3+}/V^{2+} couples are $2.0\ V$. $Fe_2(SO_4)_3$ has both monoclinic and rhombohedral modifications that give a flat open-circuit voltage $V_{oc} = 3.6\ V$ vs. Li and a reversible capacity for .apprx.1.8 Li atoms per formula unit. $Li_xFe_2(SO_4)_3$ shows an abrupt voltage drop occurring for $x > 2$ that can be held in check by the addition of buffers such as $Li_3Fe_2(PO_4)_3$, $FeV(SO_4)_3$, and $LiTi_2(PO_4)_3$. Changing the polyanion group from $(SO_4)_2^-$ to $(PO_4)_3^-$ in these framework compds. decreases the redox potentials from 3.2 to $2.5\ V$ for the Ti^{4+}/Ti^{3+} couple, from 2.5 to $1.7\ V$ for the V^{3+}/V^{2+} couple, and from 3.6 to $2.8\ V$ for the Fe^{3+}/Fe^{2+} couple. Comparative advantages and disadvantages of framework cathodes for Li rechargeable battery applications are discussed.
- IT 186131-66-0P, Iron lithium vanadium phosphate ($FeLi_3V(PO_4)_3$)
(synthesis and redox potential and electrochem. characteristics of)
- RN 186131-68-0 HCAPLUS
- CN Iron lithium vanadium phosphate ($FeLi_3V(PO_4)_3$) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
=====+	=====+	=====
O4P	3	14265-44-2
V	1	7440-62-2
Li	3	7439-93-2
Fe	1	7439-89-6

CC 72-2 (Electrochemistry)

Section cross-reference(s): 52

- IT 10028-22-5P, Iron sulfate ($Fe_2(SO_4)_3$) 13701-70-7P, Vanadium sulfate ($V_2(SO_4)_3$) 14521-02-9P, Iron titanium sulfate ($FeTi(SO_4)_3$) 30622-39-0P, Lithium titanium phosphate ($LiTi_2(PO_4)_3$) 36058-25-0P, Iron lithium phosphate ($Fe_2Li_3(PO_4)_3$) 186131-68-0P, Iron lithium vanadium phosphate ($FeLi_3V(PO_4)_3$) 186131-69-1P, Iron vanadium sulfate ($FeV(SO_4)_3$)
(synthesis and redox potential and electrochem. characteristics of)
- REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 51 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1995:820825 HCAPLUS Full-text
DOCUMENT NUMBER: 123:233358
ORIGINAL REFERENCE NO.: 123:41567a, 41570a
TITLE: Secondary alkali metal battery and its electrolyte
INVENTOR(S): Coetzer, Johan
PATENT ASSIGNEE(S): Lilliwytte S. A., Luxembourg
SOURCE: S. African, 30 pp.
CODEN: SFXAXB
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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ZA 9201893	A	19930913	ZA 1992-1893	19920313

PRIORITY APPLN. INFO.: ZA 1991-1900 A 19910314
 <--
 <--

ED Entered STN: 29 Sep 1995

AB The battery has an alkali metal anode, a transition metal halide cathode, and ≥ 1 liquid electrolyte $MxArpXq$, where M is an alkali metal or a mixture of these metals; A is selected from Al, B, and/or Zn; R is an organic radical or a mixture of these radicals; X is selected from organic radicals and/or halogens; x is ≥ 1 ; p is ≥ 1 ; q is ≤ 3 ; and p + q is ≥ 4 when A is selected from Al and/or B, and ≥ 3 when A is selected from Zn and mixts. comprising Zn.

IT 91295-89-8, Lithium zirconium phosphate silicate
 (Li3Zr2(PO4)(SiO4)2)

(alkali metal battery separator)

RN 81295-89-8 HCAPLUS

CN Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2) (CA INDEX NAME)

Component	Ratio	Component	Registry Number
O4Si	2		17181-37-2
O4P	1		14265-44-2
Zr	2		7440-67-7
Li	3		7439-93-2

IC ICM H01M

ICS C23F

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 12005-14-0, Aluminum lithium oxide (Al5LiO8) 12005-16-2, Aluminum sodium oxide (Al5NaO8) 12005-48-0, Aluminum sodium oxide (Al11NaO17) 12505-59-8, Aluminum lithium oxide (Al11LiO17) 58572-20-6, Sodium zirconium phosphate silicate (Na3Zr2(PO4)(SiO4)2) 81295-89-8, Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2) (alkali metal battery separator)

L25 ANSWER 52 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1993:655385 HCAPLUS Full-text

DOCUMENT NUMBER: 119:255385

ORIGINAL REFERENCE NO.: 119:45469a, 45472a

TITLE: Lithium-containing glass-ceramics

INVENTOR(S): Hosono, Hideo; Abe, Yoshihiro

PATENT ASSIGNEE(S): Shingijutsu Kaihatsu Jigyodan, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
JP 05139781	A	19930608	JP 1991-308098	19911122

PRIORITY APPLN. INFO.: JP 1991-308098 19911122
 <--
 <--

ED Entered STN: 11 Dec 1993

AB The glass-ceramics contain $Li1+xAlxTi2-x(PO4)3$ ($0 \leq x \leq 1.0$), and are prepared by melting mixts. of Li-containing oxides and $Ca3(PO4)2$ to form a glass,

crystallizing the glass by heat treatment, and leaching $\text{Ca}_3(\text{PO}_4)_2$ with acid. The glass-ceramics have high elec. conductivity and are suitable for use in batteries.

IT 151356-42-2, Aluminum lithium titanium phosphate
($\text{Al}_{10}\text{Li}_{11}\text{Ti}_{12}(\text{PO}_4)_3$)
(glass-ceramics, manufacture of elec. conductive)
RN 151356-42-2 HCAPLUS
CN Aluminum lithium titanium phosphate ($\text{Al}_{10}\text{Li}_{11}\text{Ti}_{12}(\text{PO}_4)_3$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	1 - 2	7440-32-6
Li	1 - 2	7439-93-2
Al	0 - 1	7429-90-5

IC ICM C03C010-02

ICS C03C004-16

CC 57-1 (Ceramics)

Section cross-reference(s): 52

IT 151356-42-2, Aluminum lithium titanium phosphate
($\text{Al}_{10}\text{Li}_{11}\text{Ti}_{12}(\text{PO}_4)_3$)
(glass-ceramics, manufacture of elec. conductive)

L25 ANSWER 53 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1992:163310 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 116:163310

ORIGINAL REFERENCE NO.: 116:27425a, 27428a

TITLE: Synthesis and electrical conductivity of vanadium

bronzes by molten salt electrolysis

AUTHOR(S): Kaneko, Yoshikazu; Kojima, Hironao
CORPORATE SOURCE: Fac. Eng., Yamanashi Univ., Kofu, 400, Japan

SOURCE: Solid State Ionics (1991), 49, 167-73

CODEN: SSIOD3; ISSN: 0167-2738

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 17 Apr 1992

AB The ionic-electronic conducting compds. of lithium vanadium bronzes, copper vanadium bronzes, and Mo doped vanadium bronzes were obtained from molten $\text{LiVO}_3\text{-V}_2\text{O}_5$ system, $\text{V}_2\text{O}_5\text{-Li}_3\text{PO}_4$ system, $\text{V}_2\text{O}_5\text{-CuCl}$ system, and $\text{V}_2\text{O}_5\text{-Li}_2\text{MoO}_4$ system by electrolysis. The electrolysis conditions were determined from the cyclic voltammograms of electrolytic bath at 650° to 800° . The mixture melts of V_2O_5 containing 9.1 mol% Li_3PO_4 were used as the ideal composition of electrolytic bath for $\beta\text{-Li}_{0.36}\text{V}_2\text{O}_5$ crystallization. The lithium contents of $\beta\text{-Li}_{0.36}\text{V}_2\text{O}_5$ crystals were controlled with c.d. and composition of electrolytic bath. The crystals of $\text{Li}_{0.29}\text{V}_{1.82}\text{Mo}_{0.18}\text{O}_4$ were obtained from electrolysis of V_2O_5 melts containing 25 mol% Li_2MoO_4 . The activation energy of conductivity for Mo doped lithium vanadium bronzes was less than the non Mo doped bronzes.

IT 139900-33-7, Lithium vanadium oxide phosphate
($\text{Li}_{10}\text{.24V}_{10}\text{.51O}_{1.27}(\text{PO}_4)_3$)

(cyclic voltammogram of)

RN 139900-33-7 HCAPLUS

CN Lithium vanadium oxide phosphate ($\text{Li}_{10}\text{.24V}_{10}\text{.51O}_{1.27}(\text{PO}_4)_3$) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====

O		1.27		17778-80-2
O4P		0.75		14265-44-2
V		0.51		7440-62-2
Li		2.24		7439-93-2

CC 76-1 (Electric Phenomena)

Section cross-reference(s): 72, 78

IT 139900-32-6, Lithium vanadium oxide phosphate
(Li0.27V1.82O4.54(P04)0.09) 139900-33-7, Lithium vanadium
oxide phosphate (Li0.24V0.51O1.27(P04)0.75) 139900-34-8, Lithium
vanadium oxide (Li0.57V1.43O3.86)
(cyclic voltammogram of)

L25 ANSWER 54 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1991:665266 HCAPLUS Full-text

DOCUMENT NUMBER: 115:265266

ORIGINAL REFERENCE NO.: 115:44917a,44920a

TITLE: Intercalation in 3D-skeleton structures: ionic
and electronic features

AUTHOR(S): Hagenmuller, Paul; Delmas, Claude

CORPORATE SOURCE: Lab. Chimie Solide, Univ. Bordeaux I, Talence,
33405, Fr.

SOURCE: Materials Research Society Symposium Proceedings (1991), 210(Solid State Ionics 2), 323-34
CODEN: MRSPDH; ISSN: 0272-9172

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 14 Dec 1991

AB The voltage of an electrochem. cell, i.e. the difference between the chemical potentials of the two electrodes, may play the role of a sensor which allows to display the structural modifications and the phys. properties. The electrochem. processes involved in an alkali metal (A) intercalation electrode emphasize the influence of the ionic and/or electronic features. The A+-lattice and A+-A+ interactions as well as electronic band-filling may lead to phase transitions or even limit the intercalation reaction. The shape of the cell voltage vs. intercalation rate curve depends on the number of vacant sites available for intercalation, the number and the oxidation state of the reducible cations, the band structure of the material and the covalency of the framework. Alkali ion intercalation in 3D-structures related to perovskite (Ln1/3NbO3), hexagonal tungsten bronze (LiW3O9F) and Nasicon-type (AM2(P04)3) is discussed from that point of view. In Ln1/3NbO3 (Ln = La, Nd) (i.e. .box. 1/2Ln1/3.box.'1/6NbO3) Li+ intercalation in various sites is related to the rare earth size. Two extra lithium atoms can be introduced into LiW3O9F in which four sites are available, but only one out of two is occupied in order to reduce the electrostatic interactions. Moreover the change in the discharge curves can be associated to the modifications with intercalation rate of the Li+-lattice interactions. Within the Nasicon derived structures of ATi2(P04)3 and Fe2(MoO4)3 the intercalation process is limited by the lowest stable oxidation state of titanium or iron. In both systems the strong electronic localization leads to formation of large two phase-domains. The relevance of using 3D-intercalation electrodes in electrochem. power batteries will be discussed as for factors such as elec. behavior or absence of significant unit cell modifications of the pos. electrodes during the intercalation process are essential for many cycle utilizations.

IT 119536-20-8, Lithium titanium phosphate (Li1-3Ti2(P04)3)
(charging and discharging of, intercalation in relation to)

RN 119536-20-8 HCAPLUS

CN Lithium titanium phosphate (Li1-3Ti2(P04)3) (CA INDEX NAME)

Component		Ratio		Component
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		Registry Number
O4P	3	14265-44-2
Ti	2	7440-32-6
Li	1 - 3	7439-93-2

CC 72-2 (Electrochemistry)

Section cross-reference(s): 78

IT 119536-20-8, Lithium titanium phosphate (Li1-3Ti2(PO4)3)

119536-21-9, Sodium titanium phosphate (Na1-3Ti2(PO4)3)

(charging and discharging of, intercalation in relation to)

L25 ANSWER 55 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1991:232057 HCAPLUS Full-text

DOCUMENT NUMBER: 114:232057

ORIGINAL REFERENCE NO.: 114:39107a,39110a

TITLE: Lithium ion-conductive solid electrolyte containing lithium titanium phosphate

INVENTOR(S): Adachi, Ginya; Imanaka, Nobuhito; Aono, Hiromichi; Sugimoto, Eisuke; Sadaoka, Yoshihiko; Yasuda, Naoshi; Hara, Takeo; Nagata, Masaki

PATENT ASSIGNEE(S): Japan Synthetic Rubber Co., Ltd., Japan

SOURCE: U.S., 15 pp.
CODEN: USXXAMDOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 4

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4985317	A	19910115	US 1989-372075	19890628
JP 02148655	A	19900607	JP 1988-302539	19881130
JP 02148656	A	19900607	JP 1988-302540	19881130
JP 02162605	A	19900622	JP 1988-315800	19881214
JP 03029206	A	19910207	JP 1989-259832	19891004
PRIORITY APPLN. INFO.:			JP 1988-302539	A 19881130
			JP 1988-302540	A 19881130
			JP 1988-315800	A 19881214
			JP 1989-57367	A 19890309

ED Entered STN: 15 Jun 1991

AB The electrolyte is $\text{Li}_{1+x}\text{M}_x\text{Ti}_{2-x}(\text{PO}_4)_3$, $\text{Li}_{1+y}\text{Ti}_{2-2y}\text{P}_3\text{O}_{12}$, or a compound obtained by mixing $\text{LiTi}_2(\text{PO}_4)_3$ with another Li compound, where M is ≥ 1 element selected from Fe, Al, Sc, Y, La, and rare earth elements; $x = 0.1-1.9$; and $y = 0.1-2.9$. The electrolyte can be used in small and thin batteries in the form of a sheet of an insulating elastomer with 55-95 volume% of uniformly dispersed solid electrolyte powder. Several invention electrolytes were prepared, and their ion conductivity, Li^+ transport number, and chemical stability are reported.

IT 133340-01-9, Lithium scandium titanium phosphate
($\text{Li}_{1-1.2}\text{Sc}_{0.1-1.9}\text{Ti}_{0.1-1.9}(\text{PO}_4)_3$) 133340-02-9, Aluminum

lithium titanium phosphate (Al_{0.1-1.9}Li_{1.1-2.9}Ti_{0.1-1.9}(PO₄)₃)
 133340-03-1, Iron lithium titanium phosphate
 (Fe_{0.1-1.9}Li_{1.1-2.9}Ti_{0.1-1.9}(PO₄)₃) 133340-04-2, Lithium
 titanium phosphate silicate (Li_{1.1-3.9}Ti₂(PO₄)_{0.1-2.9}(SiO₄)_{0.1-2.9})
 133517-12-1, Lanthanum lithium titanium phosphate
 (La_{0.1-1.9}Li_{1.1-2.9}Ti_{0.1-1.9}(PO₄)₃) 133741-58-9, Lithium
 titanium yttrium phosphate (Li_{1.1-2.9}Ti_{0.1-1.9}Y_{0.1-1.9}(PO₄)₃)
 (electrolytes, lithium ion-conductive, for small and thin
 batteries)

RN 133340-01-9 HCAPLUS

CN Lithium scandium titanium phosphate (Li_{1.1-2.9}Sc_{0.1-1.9}Ti_{0.1-1.9}(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.1 - 1.9	7440-32-6
Sc	0.1 - 1.9	7440-20-2
Li	1.1 - 2.9	7439-93-2

RN 133340-02-0 HCAPLUS

CN Aluminum lithium titanium phosphate (Al_{0.1-1.9}Li_{1.1-2.9}Ti_{0.1-1.9}(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.1 - 1.9	7440-32-6
Li	1.1 - 2.9	7439-93-2
Al	0.1 - 1.9	7429-90-5

RN 133340-03-1 HCAPLUS

CN Iron lithium titanium phosphate (Fe_{0.1-1.9}Li_{1.1-2.9}Ti_{0.1-1.9}(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.1 - 1.9	7440-32-6
Li	1.1 - 2.9	7439-93-2
Fe	0.1 - 1.9	7439-89-6

RN 133340-04-2 HCAPLUS

CN Lithium titanium phosphate silicate (Li_{1.1-3.9}Ti₂(PO₄)_{0.1-2.9}(SiO₄)_{0.1-2.9}) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	0.1 - 2.9	17181-37-2
O4P	0.1 - 2.9	14265-44-2
Ti	2	7440-32-6
Li	1.1 - 3.9	7439-93-2

RN 133517-12-1 HCAPLUS

CN Lanthanum lithium titanium phosphate (La_{0.1-1.9}Li_{1.1-2.9}Ti_{0.1-1.9}(PO₄)₃) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Ti	0.1 - 1.9	7440-32-6
Li	1.1 - 2.9	7439-93-2
La	0.1 - 1.9	7439-91-0

RN 133741-58-9 HCAPLUS

CN Lithium titanium yttrium phosphate (Li1.1-2.9Ti0.1-1.9Y0.1-1.9(PO4)3)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2
Y	0.1 - 1.9	7440-65-5
Ti	0.1 - 1.9	7440-32-6
Li	1.1 - 2.9	7439-93-2

IC ICM H01M006-18

INCL 429191000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 39, 72, 76

IT 133340-01-9, Lithium scandium titanium phosphate
(Li1.1-2.9Sc0.1-1.9Ti0.1-1.9(PO4)3) 133340-02-0, Aluminum
lithium titanium phosphate (Al0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3)
133340-03-1, Iron lithium titanium phosphate
(Fe0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) 133340-04-2, Lithium
titanium phosphate silicate (Li1.1-3.9Ti2(PO4)0.1-2.9(SiO4)0.1-2.9)
133517-12-1, Lanthanum lithium titanium phosphate
(La0.1-1.9Li1.1-2.9Ti0.1-1.9(PO4)3) 133741-58-9, Lithium
titanium yttrium phosphate (Li1.1-2.9Ti0.1-1.9Y0.1-1.9(PO4)3)
(electrolytes, lithium ion-conductive, for small and thin
batteries)

L25 ANSWER 56 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1989:466661 HCAPLUS [Full-text](#)

DOCUMENT NUMBER: 111:66661

ORIGINAL REFERENCE NO.: 111:11111a,11114a

TITLE: Synthesis using solid electrolyte

INVENTOR(S): Yokoyama, Seiichiro

PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01042589	A	19890214	JP 1987-196267	19870807
			<--	
PRIORITY APPLN. INFO.:			JP 1987-196267	19870807
			<--	

ED Entered STN: 20 Aug 1989

AB The title method involves applying a potential to an electrode catalyst comprising an electrode and metal-ion-conductive solid electrolyte, and contacting a raw material (in vapor phase) to the electrode catalyst. Thus, an electrode of K2O.11Al2O3 was used for forming paraformaldehyde from MeOH.

IT 81295-89-8
(solid electrolytes, as electrode catalyst for electrolysis)

RN 81295-89-8 HCAPLUS

CN Lithium zirconium phosphate silicate (Li3Zr2(PO4)(SiO4)2) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4Si	2	17181-37-2
O4P	1	14265-44-2
Zr	2	7440-67-7
Li	3	7439-93-2

IC ICM C25B003-02

CC 72-9 (Electrochemistry)

Section cross-reference(s): 23, 51

IT 12005-47-9 12267-44-6 58572-20-6 71211-68-2 80892-16-6
81295-89-8
(solid electrolytes, as electrode catalyst for electrolysis)

L25 ANSWER 57 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1989:123586 HCAPLUS Full-text

DOCUMENT NUMBER: 110:123586

ORIGINAL REFERENCE NO.: 110:20257a,20260a

TITLE: The NASICON-type titanium phosphates ATi2(PO4)3 (A = lithium, sodium) as electrode materials

AUTHOR(S): Delmas, C.; Nadiri, A.; Soubeyroux, J. L.

CORPORATE SOURCE: Lab. Chim. Solide, Univ. Bordeaux I, Talence, 33405, Fr.

SOURCE: Solid State Ionics (1988), Volume Date 1987, 28-30(Pt. 1), 419-23

CODEN: SSIOD3; ISSN: 0167-2738

DOCUMENT TYPE: Journal

LANGUAGE: English

ED Entered STN: 03 Apr 1989

AB Li and Na were intercalated in LiTi2(PO4)3 and NaTi2(PO4)3, resp.. Despite the low electronic conductivity of the Nasicon framework the intercalation can be realized either chemical or electrochem. The electrochem. study shows the reversibility of the process and the existence of large biphased domains in both systems. The observed phase separation reactions result from Li+(Na+) and e- migration without skeleton bond breaking and recombination. The large hexagonal c-parameter of Li3Ti2(PO4)3 results from a peculiar Li ion distribution (M(1) empty, M(2) fully occupied) as shown by neutron diffraction.

IT 119536-20-8P, Lithium titanium phosphate (Li1-3Ti2(PO4)3)
119536-22-8P, Lithium titanium phosphate (Li2.72Ti2(PO4)3)
119536-23-1P, Lithium titanium phosphate (Li1-3.3Ti2(PO4)3)
(formation of, electrochem.)

RN 119536-20-8 HCAPLUS

CN Lithium titanium phosphate (Li1-3Ti2(PO4)3) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O4P	3	14265-44-2

Ti		2		7440-32-6
Li		1 - 3		7439-93-2

RN 119536-22-0 HCAPLUS

CN Lithium titanium phosphate (Li₂.72Ti₂(PO₄)₃) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O4P		3		14265-44-2
Ti		2		7440-32-6
Li		2.72		7439-93-2

RN 119536-23-1 HCAPLUS

CN Lithium titanium phosphate (Li₁-3.3Ti₂(PO₄)₃) (CA INDEX NAME)

Component		Ratio		Component Registry Number
O4P		3		14265-44-2
Ti		2		7440-32-6
Li		1 - 3.3		7439-93-2

CC 72-2 (Electrochemistry)

Section cross-reference(s): 76, 78

IT 119536-20-8P, Lithium titanium phosphate (Li₁-3Ti₂(PO₄)₃)
 119536-21-9P, Sodium titanium phosphate (Na₁-3Ti₂(PO₄)₃)
 119536-22-0P, Lithium titanium phosphate (Li₂.72Ti₂(PO₄)₃)
 119536-23-1P, Lithium titanium phosphate (Li₁-3.3Ti₂(PO₄)₃)
 (formation of, electrochem.)

L25 ANSWER 58 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1987:416602 HCAPLUS Full-text

DOCUMENT NUMBER: 107:16602

ORIGINAL REFERENCE NO.: 107:2659a,2662a

TITLE: Lithium intercalation in lithium titanium phosphate (LiTi₂(PO₄)₃)

AUTHOR(S): Nadiri, Abdelilah; Delmas, Claude

CORPORATE SOURCE: Lab. Chim. Solide, Univ. Bordeaux-I, Talence, 33405, Fr.

SOURCE: Comptes Rendus de l'Academie des Sciences, Serie II: Mecanique, Physique, Chimie, Sciences de la Terre et de l'Univers (1987), 304(9), 415-18

CODEN: CRAMED; ISSN: 0764-4450

DOCUMENT TYPE: Journal

LANGUAGE: French

ED Entered STN: 11 Jul 1987

AB Li was intercalated either chemical or electrochem. in LiTi₂(PO₄)₃. Two Li_{1-x}Ti₂(PO₄)₃ solid solns. were obtained for 0 ≤ x ≤ 0.23 and 1.72 ≤ x ≤ 2. The reversible character of the intercalation reaction shows that the 3D Nasicon skeleton maintains. Nevertheless, the large difference in cell parameters between both solid solns. suggests a strong modification in the Li site occupancy.

IT 104822-16-1P
 (preparation by electrochem. intercalation and crystal structure of)

RN 108823-16-1 HCAPLUS

CN Lithium titanium phosphate (Li₁.72-2Ti₂(PO₄)₃) (CA INDEX NAME)

Component		Ratio		Component
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		Registry Number
O4P	3	14265-44-2
Ti	2	7440-32-6
Li	1.72 - 2	7439-93-2

CC 78-3 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 72, 75

IT 108823-15-0P 108823-16-1P

(preparation by electrochem. intercalation and crystal structure of)

L25 ANSWER 59 OF 59 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1982:151389 HCAPLUS Full-text

DOCUMENT NUMBER: 96:151389

ORIGINAL REFERENCE NO.: 96:24769a,24772a

TITLE: Lithium anode battery

PATENT ASSIGNEE(S): Nippon Telegraph and Telephone Public Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 56162477	A	19811214	JP 1980-65972	19800520
			<--	
PRIORITY APPLN. INFO.:			JP 1980-65972	A 19800520
			<--	

ED Entered STN: 12 May 1984

AB A Li anode battery employs Li₃Zr₂Si₂P₂O₁₂ or Li₁₄Zn(GeO₄)₄ as the cathode active material and an electrolyte which is stable towards the cathode-active material and Li, Li⁺ being transported to effect an electrochem. reaction with the cathode active material.

IT 81295-89-8

(cathodes, in lithium batteries)

RN 81295-89-8 HCAPLUS

CN Lithium zirconium phosphate silicate (Li₃Zr₂(PO₄)(SiO₄)₂) (CA INDEX NAME)

Component	Ratio	Component
		Registry Number
O4Si	2	17181-37-2
O4P	1	14265-44-2
Zr	2	7440-67-7
Li	3	7439-93-2

IC H01M004-58; H01M004-38; H01M006-16; H01M010-40

CC 72-3 (Electrochemistry)

IT 70780-99-3 81295-89-8

(cathodes, in lithium batteries)

=> d his nofile

(FILE 'HOME' ENTERED AT 13:46:14 ON 15 SEP 2008)

FILE 'HCAPLUS' ENTERED AT 13:46:20 ON 15 SEP 2008

L1 1 SEA ABB=ON PLU=ON US20060216611/PN
SEL RN

FILE 'REGISTRY' ENTERED AT 13:46:49 ON 15 SEP 2008

L2 0 SEA ABB=ON PLU=ON E1-R51
L3 51 SEA ABB=ON PLU=ON (12190-79-3/BI OR 782495-23-2/BI OR
782495-24-3/BI OR 782495-25-4/BI OR 782495-26-5/BI OR
782495-27-6/BI OR 782495-28-7/BI OR 782495-29-8/BI OR
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782495-66-3/BI OR 782495-67-4/BI OR 782495-69-6/BI OR
782495-70-9/BI OR 782495-72-1/BI OR 782495-74-3/BI OR
782495-76-5/BI)
L4 3811 SEA ABB=ON PLU=ON (LI(L)P(L)O(L)(TI OR V OR CR OR MN OR
FE OR CO OR NI OR CU OR ZR OR NB OR MO OR RU OR AG OR TA
OR W OR PT OR AU))/ELS
L5 49 SEA ABB=ON PLU=ON L4 AND L3
L6 2 SEA ABB=ON PLU=ON L3 NOT L5
L7 521 SEA ABB=ON PLU=ON L4 AND 2-7/LI
L8 3655 SEA ABB=ON PLU=ON L4 AND O>=2
L9 3102 SEA ABB=ON PLU=ON L4 AND 3.5-8/O
L10 2942 SEA ABB=ON PLU=ON L9 AND 0.01-1/M
L11 476 SEA ABB=ON PLU=ON L7 AND L9 AND L10

FILE 'HCAPLUS' ENTERED AT 14:08:10 ON 15 SEP 2008

L12 6 SEA ABB=ON PLU=ON L5
L13 3588 SEA ABB=ON PLU=ON L4
L14 201 SEA ABB=ON PLU=ON L13 AND SOLID ELECTROLYT?
L15 1 SEA ABB=ON PLU=ON L14 AND L1
L16 85 SEA ABB=ON PLU=ON L14 AND DEV/RL
L17 59 SEA ABB=ON PLU=ON L16 AND (1840-2003)/PRY,AY,PY

FILE 'HCAPLUS' ENTERED AT 14:22:27 ON 15 SEP 2008

L18 1 SEA ABB=ON PLU=ON L12 AND (1840-2003)/PRY,AY,PY
L19 59 SEA ABB=ON PLU=ON L17 OR L18

FILE 'REGISTRY' ENTERED AT 14:23:18 ON 15 SEP 2008

L20 49 SEA ABB=ON PLU=ON L3 AND L11
L21 473 SEA ABB=ON PLU=ON L11 AND TIS/CI

FILE 'HCAPLUS' ENTERED AT 14:34:41 ON 15 SEP 2008

L22 210 SEA ABB=ON PLU=ON L21
L23 4 SEA ABB=ON PLU=ON L22 AND L19

10/551,935

L24	117	SEA	ABB=ON	PLU=ON	L22 AND ELECTROCHEM?/SC, SX
L25	59	SEA	ABB=ON	PLU=ON	L24 AND (1840-2003)/PRY, AY, PY
L26	1	SEA	ABB=ON	PLU=ON	L25 AND